THE INSTITUTION
OF ELECTRICAL
ENGINEERS

IEE Proceedings

Vol. 135, 1988

Published by
The IEE, Savoy Place, London WC2R 0BL, United Kingdom
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ, United Kingdom

IEE Proceedings

The Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, United Kingdom.
Publishing Department: PO Box 8, Southgate House, Stevenage, Herts. SG1 1HQ, United Kingdom

Volume 135 1988

The *IEE Proceedings* is published in ten Parts, as follows:

Part A: Physical Science, Management and Instrumentation, Management and Education, Reviews

Part B: Electric Power Applications

Part C: Generation, Transmission and Distribution

Part D: Control Theory and Applications

Part E: Computers and Digital Techniques

Part F: Communications, Radar and Signal Processing

Part G: Electronic Circuits and Systems

Part H: Microwaves, Antennas and Propagation

Part I: Solid-State and Electron Devices

Part J: Optoelectronics

Six issues of each Part are published during the year, and additional special issues are published covering specialist areas.

This publication is copyright under the Berne Convention and the International Copyright Convention. All rights reserved. Apart from any copying under the UK Copyright Act 1956, part 1, section 7, whereby a single copy of this article may be supplied, under certain conditions, for the purposes of research or private study, by a library of a class prescribed by the UK Board of Trade Regulations (Statutory Instruments, 1957, no. 868), no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission of the copyright owners. Permission is, however, not required to copy abstracts of papers or articles on condition that a full reference to the source is shown.

An IEE licensing arrangement exists whereby organisations entering into an agreement are legally entitled to make up to twenty copies of an IEE paper or article.

Authorisation to photocopy items for internal or personal use, or for the internal or personal use of specific clients, is granted by the Institution of Electrical Engineers for libraries and other users registered with the Copyright Clearance Center Transactional Reporting Service, provided that the base fee of $3.00 per copy is paid directly to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA. 0143–702X/88 $3.00 + 0.00. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale.

Photocopies of individual papers published in the *IEE Proceedings* can be supplied from the IEE Library at 10p per page plus a handling charge of 50p per paper, which covers the cost of surface mail (airmail extra). The handling charge is waived if reprints are collected from Savoy Place by purchasers.

The telephone number of the IEE London office is 01 240 1871; telex: 261176 IEELDN G; facsimile: 01 240 7735.

The IEE is not as a body responsible for the opinions expressed by individual authors.
The IEE is a member of the Association of Learned & Professional Society Publishers.

© 1988: The Institution of Electrical Engineers

Secretary of the IEE: H.H.W. Losty, DEng, FEng, FIEE
Managing Editor: Bernard Dunkley; *Senior Assistant Editor:* Stephen Cokeham
Assistant Editors: Rachael Jones, Louise Smith, Sagorika Ghose, Kathryn Thurston, Jill Priest
Graphics Manager: Maurice Partridge

Typeset by: Santype International Limited, Salisbury, Wiltshire, United Kingdom
Printed by: Unwin Brothers Limited, Old Woking, Surrey, United Kingdom
Black Bear Press, Cambridge, United Kingdom

Index

IEE Proceedings

Vol. 135, 1988

ABBREVIATIONS

- p paper, address or lecture
- d discussion on a paper
- a abstract of paper or address
- e errata
- s synopsis of a paper published in full in another Part of the IEE Proceesings

Author index

A

Abboud, F., Damiano, J.P., and Papiernik, A. Simple model for the input impedance of coax-fed rectangular microstrip patch antenna for CAD H p323
Abdala, M.A., and Jones, B.K. Output characteristic stabilisation of power MOSFETs I p91
Abdel-Aziz, M.R., Farghal, S.A., and Kandil, M.S. see Farghal, S.A.
Abdul-Aal, L.N., and Barakat, E.H. see Barakat, E.H.
Abu-Elnaga, M.M., El-Kady, M.A., and Findlay, R.D. Incorporation of load models in the direct method of power system transient stability C p474
Abuelma'atti, M.T. Prediction of RFI demodulation in bipolar operational amplifiers G p29
Acarnley, P.P., and Clarkson, P.J. see Clarkson, P.J.
Adachi, F., Feeney, M.T., and Parsons, J.D. Effects of correlated fading on level crossing rates and average fade durations with predetection diversity reception F p11
Adachi, F., Feeney, M.T., and Parsons, J.D. Level crossing rate and average fade duration for time diversity reception in Rayleigh fading conditions F p501
Adachi, F., and Ohno, K. Performance analysis of GMSK frequency detection with decision feedback equalisation in digital land mobile radio F p199
Adams, M.J., and Westbrook, L.D. see Westbrook, L.D.
Agamennoni, O.E., Romagnoli, J.A., Karim, M.N., and Desages, A. see Romagnoli, J.A.
Agathoklis, P., and Foda, S. Characteristic polynomial assignment in 2-dimensional discrete systems D p253
Aghvami, A.H., and Cheung, S.W. see Cheung, S.W.
Ahmed, M.T., Khan, I.A., and Parveen, T. see Khan, I.A.
Ahson, S.I., Singh, N.P., and Singh, Y.P. see Singh, N.P.
Ainslie, B.J., Millar, C.A., Miller, I.D., Mortimore, D.B., and Urquhart, P. see Millar, C.A.
Ainsworth, J.D. Phase-locked oscillator control system for thyristor-controlled reactors C p146
Ajayi, O.O., and Ajose, S.O. Semi-analytical method for computing input impedance of general non-uniform transmission line H p269
Ajose, S.O., and Ajayi, O.O. see Ajayi, O.O.
Akiba, Shigeyuki, Usami, Masashi, Utaka, Katsuyuki, and Matsushima, Yuichi see Usami, Masashi
Al-Bader, S.J., and Jamid, H.A. Metal-clad ridge waveguide laser modes J p79
Al-Hussaini, Emad K. Performance of the greater-of and censored greater-of detectors in multiple target environments F p193
Al-Khalili, A.J., Al-Khalili, D., and Khassem, M.S. Multiple single-chip microcomputer approach to fire detection and monitoring system G p1
Al-Khalili, D., Al-Khalili, A.J., and Khassem, M.S. see Al-Khalili, A.J.
Al-Nuaimi, M.O., and Charnley, M. Simultaneous voice and data transmission in private mobile radio using a narrowband FM channel F p439
Albanese, R., and Rubinacci, G. Integral formulation for 3D eddy-current computation using edge elements A p457
Alcuri, L., Mamola, G., and Randazzo, E. Asymptotic behaviour of bit error rate for bandpass direct-sequence spread-spectrum modulation systems F p487
Allan, D.A., Herniman, J., and O'Sullivan, P.J. see Herniman, J.
Allen, J.F., and Wray, E.M. The St. Andrews 1863 British Association Ohm A p88
Allen, N.L., Bower, S., and Mellor, D.J. A photon-triggered spark gap A p56
Allidina, A.Y., and Benkherouf, A. see Benkherouf, A.
Alvarez-Gallegos, J. Application of nonlinear system transformations to control design for a chemical reactor D p90
Alyan, M.A.A.S., Osheba, S.M., and Rahim, Y.H.A. see Osheba, S.M.
Amann, M.-C. Waveguiding analysis of mushroom stripe laser diodes J p68
Amann, M.-C., Wolf, Th., Kappeler, F., and Stegmüller, B. see Wolf, Th.
Amaral, W.C., Mendes, R.S., and Latre, L.G. see Mendes, R.S.
Amaratunga, G.A.J., and Crawley, D.G. see Crawley, D.G.
Ambardar, A., and Mandojana, J.C. see Mandojana, J.C.
Amir, B.H., and Lidgate, D. see Lidgate, D.
Ammasai Gounden, N., Subbiah, M., and Krishnamurthy, M.R. Operating cost optimisation of speed-changing induction motors B p33
Anders, G.J., and Radhakrishna, H.S. Computation of temperature field and moisture content in the vicinity of current carrying underground power cables C p51
Andersen, P., and Campbell, S.A. see Campbell, S.A.
Anderson, A.P., and Junkin, G. see Junkin, G.
Andrasic, G., and James, J.R. see James, J.R.
Andres, M.V., Tudor, M.J., Foulds, K.W.H., and Naden, J.M. see Tudor, M.J.
Andresen, E., Qishan, G., and Chun, G. see Qishan, G.
Andrews, M., and Nguyen, D.T. Techniques for improving stability rate of linear predictive image coding schemes E p298
Ang, A.L., and Yeo, S.P. see Yeo, S.P.
Annovazzi-Lodi, V., Donati, S., and Tambosso, T. see Donati, S.
Ares, F., and Moreno, E. New method for computing Dolph-Chebyshev arrays, and its comparison with other methods H p129
Armenise, M.N. Fabrication techniques of lithium niobate waveguides J p85
Armstrong, A.G., Begg, M.C., and Toyer, J. see Begg, M.C.
Arnold, J.M., and Gribble, J.J. see Gribble, J.J.
Artym, R., and Mason, J.S. XPXM/C: a taxonomy of processor coupling techniques E p173
Arvas, E., Ross, M., and Qian, Y. TM scattering from a conducting cylinder of arbitrary cross-section covered by multiple layers of lossy dielectrics H p226
Ash, E.A. Inaugural Address: Higher education, industry and Government — new rules for a *ménage à trois* A p1
Ashkenazy, J., Shtrikman, S., and Treves, D. Conformal microstrip arrays on cylinders H p132
Ashworth, D.M., and Byron, K.C. see Byron, K.C.
Askarian Abyaneh, H., and Lidgate, D. see Lidgate, D.
Atkinson, N., and Rodger, D. see Rodger, D.
Au, S., and Smy, P.R. Arcs in boundary layer flow A p69
Auchterlonie, L.J., and Hume, A.L. see Hume, A.L.
Auckland, D.W., Shuttleworth, R., and Wong, T.W. Digital synchronisation of switching transistors B p97
Auda, H.A. Quasistatic characteristics of slotted parallel-plate waveguides H p256
Avent, B.L., Peelo, D.F., Drakos, J.E., Giudici, B.C., and Irvine, J.R. see Peelo, D.F.
Azzam, M., and Marsh, J.F. see Marsh, J.F.
Azzawi, F.J. Al, Baldawi, F.F. Al, and Narayana, C.L. Fast methods for direct assessment of power system transient stability C p469

B

Baars, J.W.M., Morris, D., Hein, H., and Steppe, H. see Morris, D.
Badr, R.I., Hassan, M.F., Bernussou, J., and Bilal, A.Y. Time-domain robustness and performance optimisation of linear quadratic control problems D p223
Bai Park, Song, and Woo Lee, Chang see Woo Lee, Chang
Baines, J.G., Raine, W.W., and King, R.J. see Raine, W.W.
Balachandran, K., Palanisamy, K.R., and Ramasamy, R.S. see Palanisamy, K.R.
Balachandran, K., and Palanisamy, K.R. see Palanisamy, K.R.
Baldawi, F.F. Al, Azzawi, F.J. Al, and Narayana, C.L. see Azzawi, F.J. Al
Baldomir, D., and Hammond, P. see Hammond, P.
Bandyopadhyay, S., and Sengupta, A. Algorithms for multiplication in Galois field for implementation using systolic arrays E p336
Bansal, R., and Casey, J.P. see Casey, J.P.
Bar-David, I., and Goldman, H. see Goldman, H.
Barada, H., and El-Amawy, A. Systolic architecture for matrix triangularisation with partial pivoting E p208
Barakat, E.H., and Abdul-Aal, L.N. Representation of transformer magnetising characteristic by the extended logistic model C p144
Barber, T.J., and Boardman, J.T. Knowledge-based project control employing heuristic optimisation A p529
Bartel, D.L., Leu, M.C., and Scorza, E.V. see Leu, M.C.
Barton, T.H., Zhang, Jie, Thiagarajan, V., and Grant, T. see Zhang, Jie
Basso-Ndjock, E., and Broche, C. Two-dimensional field computation using boundary integral equations method for stationary and quasistationary problems with external current sources A p173
Bate, J.A., and Miller, D.M. Exhaustive testing of stuck-open faults in CMOS combinational circuits E p10
Bauman, P., Reilly, J., and Litva, J. see Reilly, J.
Bava, G.P., Debernardi, P.L., Montrosset, I., and Scrivanti, M. Threshold current of ridge waveguide laser in gain and index regimes including end facet reflectivity J p159
Beale, M., and Goswami, C.S. see Goswami, C.S.
Beaujean, D.A., and Morgan, S.B. An educational perspective on in-circuit testing A p233
Beck, H. Engineers and management A p390
Beenker, F.P.M., Veenstra, P.K., and Koomen, J.J.M. see Veenstra, P.K.
Begg, M.C., Armstrong, A.G., and Toyer, J. Application of layer theory to transient electromagnetic problems in linear media A p188
Bekakos, M.P., Margaritis, K., and Evans, D.J. see Margaritis, K.
Belezinis, P., Turner, L.F., and Habbab, I.M.I. Performance of slot synchronous time-frequency coded spread spectrum systems F p520
Belezinis, P., and Turner, L.F. Performance of time-frequency coded spread spectrum systems operating over noisy fading channels F p513
Bell, D.A. Technology and the human factor A p309
Benaissa, M., Diay, S.S., Bouridane, A., and Holt, A.G.J. see Diay, S.S.
Benaissa, M., Pajayakrit, A., Diay, S.S., and Holt, A.G.J. VLSI design for diminished-1 multiplication of integers modulo a Fermat number E p161
Benelli, G. Integration of channel coding and modulation in the ARQ protocols F p577
Benelli, G. Some new retransmission strategies for multipacket slotted ALOHA protocol F p585
Benkherouf, A., and Allidina, A.Y. Leak detection and location in gas pipelines D p142
Benmahammed, K. Factored state-space realisation of two-dimensional systems D p421
Bennell, F.T. Current equalising transformer for current balance in parallel-connected 12-pulse converter B p85
Benson, T.M., Kendall, P.C., and Stern, M.S. Microwave simulation of optoelectronic bending loss in presence of dielectric discontinuity J p325
Berger, C.S. Robust pole-placement algorithm for adaptive control D p493
Bergmann, J., Brown, R.C., Clarricoats, P.J.B., and Zhou, H. Synthesis of shaped-beam reflector antenna patterns H p48
Bernard, G., Perrissin, G., and Marzocca, J. Use of an auto-expansion circuit breaker in a ring main unit C p219
Bernussou, J., Badr, R.I., Hassan, M.F., and Bilal, A.Y. see Badr, R.I.
Bhadra Chaudhuri, S.R., Bhattacharjee, A.K., Mukherjee, A., Poddar, D.R., and Chowdhury, S.K. see Bhattacharjee, A.K.
Bhat, A.K.S., and Dewan, S.B. DC-to-utility interface using sinewave resonant inverter B p193
Bhattacharjee, A.K., Bhadra Chaudhuri, S.R., Mukherjee, A., Poddar, D.R., and Chowdhury, S.K. Input impedance of rectangular microstrip antennas H p351
Bhattacharya, J.L., and Woodward, J.L. Excitation balancing of a self-excited induction generator for maximum power output C p88
Bhattacharyya, A.B., Singh, S.P., and Prabhakar, A. see Singh, S.P.
Biggar, M.J., Morris, O.J., and Constantinides, A.G. Segmented-image coding: performance comparison with the discrete cosine transform F p121
Bilal, A.Y., Badr, R.I., Hassan, M.F., and Bernussou, J. see Badr, R.I.

Billinton, R., and Oteng-Adjei, J. Cost/benefit *approach to establish optimum adequacy level* for generating system planning C p81
Bird, T.S. Exact solution for asymmetric mode excitation *of open-ended coaxial waveguide with* centre conductor of infinite extent and applications H p88
Bishop, M.L., and Lister, P.F. see Lister, P.F.
Blood, P., Kucharska, A.I., Fletcher, E.D., and Hulyer, P.J. see Kucharska, A.I.
Bo, Y.-M., and Zhang, W.-X. see Zhang, W.-X.
Board, K., McCowen, A., and Shaari, S.B.H. see McCowen, A.
Boardman, J.T., and Barber, T.J. see Barber, T.J.
Bodger, P.S., and Norriss, T.B. Ripple control interference at irrigation installations C p503
Bogatov, A.P. Waveguiding and temperature characteristics of *threshold current and amplitude-*phase coupling coefficient in double-heterostructure lasers J p226
Bolouri, H.S., and Lea, R.M. see Lea, R.M.
Bolton, B. Polyhedral dynamics applied to design and project management A p241
Bondi, Sir H. Preparation for careers in engineering and science A p227
Bonwick, W.J., and Hart, P.M. see Hart, P.M.
Boothroyd, S.A. Measurement of chromatic dispersion in stalled single-mode fibre J p215
Bosisio, R.G., and Ghannouchi, F.M. see Ghannouchi, F.M.
Bossavit, A. Magnetostatic problems in multiply connected regions: some properties of the curl *operator* A p179
Bossavit, A. Whitney forms: a class of finite elements for three-dimensional computations in electromagnetism A p493
Bouillault, F., Ren, Z., Razek, A., and Verite, J.C. see Ren, Z.
Bouridane, A., Dlay, S.S., Benaissa, M., and Holt, A.G.J. see Dlay, S.S.
Bourkas, P.D., Kayafas, E.A., and Machias, A.V. Specified current in emergency load switches C p330
Boussakta, S., Shakaff, A.Y.Md., Marir, F., and Holt, A.G.J. Number theoretic transforms of periodic *structures and their applications* G p83
Boussakta, S., and Holt, A.G.J. Calculation of the *discrete Hartley transform via the Fermat* number transform using a VLSI chip G p101
Boussakta, S., and Holt, A.G.J. Fast multidimensional *discrete Hartley transform using Fermat* number transform G p253
Bower, S., Allen, N.L., and Mellor, D.J. see Allen, N.L.
Bowers, B. Social benefits of electricity A p291
Bowes, S.R., and Bullough, R.I. Optimal PWM microprocessor-controlled current-source inverter drives B p59
Bowes, S.R., and Clare, J.C. Computer-aided design of PWM power-electronic variable-speed drives B p240
Bowes, S.R., and Midoun, A. Microprocessor implementation of new optimal PWM switching strategies B p269
Boys, J.T. A novel current sensor for PWM AC drives B p27
Boys, J.T., Green, A.W., and Gates, G.F. see Green, A.W.
Boys, J.T., and Walton, S.J. Scalar control: an alternative AC drive philosophy B p151
Brain, D., Parini, C.G., Kalatizadeh, Y., Olver, A.D., and Raghavan, K. see Parini, C.G.
Bramanti, M., and Salerno, E.A. On the PSF of a forward-scattering coherent tomographic technique H p356
Brandão Faria, Prof. J.A. Irregular wave propagation characteristics in underground transmission cables C p131
Brewster, R.L., and Dodgson, T.E. Effect of channel errors on source coded image data and the provision of adequate protection of transmission bits F p528
Brignell, Prof. J.E., White, N.M., and Cranny, A.W.J. Sensor applications of thick-film technology I p77
Broche, C., and Basso-Ndjock, E. see Basso-Ndjock, E.
Brown, A.D., and Thomas, P.R. Goal-oriented subgraph isomorphism technique for IC device recognition I p141
Brown, R.C., Bergmann, J., Clarricoats, P.J.B., and Zhou, H. see Bergmann, J.
Browne, J., and Duggan, J. see Duggan, J.
Brucoli, M., Scala, M. La, Pitrone, N., and Trovato, M. Dynamic modelling for retaining selected portions of interconnected power networks C p118
Bryant, C.F., Rikabi, J., and Freeman, E.M. see Rikabi, J.
Bukofzer, D.C. Two-channel direct-bit detection receiver for 16-PSK modulated signals F p461 F e576
Bullough, R.I., and Bowes, S.R. see Bowes, S.R.
Bura, P., Gelerman, D., and Ntake, P. Power amplifier for microwave digital radios with inherent phase compensation H p344
Burgess, N., Damper, R.I., Totton, K.A., and Shaw, S.J. Physical faults in MOS circuits and their coverage by different fault models E p1
Burton, D.P., and Coffey, T. Research co-operatives: experiences with a small-scale *approach* A p539
Burton, N.J., and Weitzel, P.M. Successful management simulation for young engineers A p110
Butcher, J.B., and Johnstone, K.K. Wafer scale integration E p281
Byron, K.C., and Ashworth, D.M. Intermodel and intramodal dispersion measuremnts on 1.3 μm single-mode fibre for use at 0.85 μm J p220

C

Caldecott, R., DeVore, R.V., Kimball, D.F., and Kasten, D.G. see DeVore, R.V.
Caldecott, R., Poirier, M., Scofea, D., Svoboda, D.E., and Terzuoli, A.J. Underground mapping of *utility lines using impulse radar* F p343
Cameron, R.G. New pole assignment algorithm with reduced norm feedback matrix D p111
Campbell, S.A., and Andersen, P. CMOS mobility degradation coefficients at low temperatures I p17
*Canay, I.M. Physical significance of sub-*subtransient quantities in dynamic behaviour of synchronous machines B p334
Capsalis, C.N., and Uzunoglu, N.K. Analysis of a multilayer coated optical planar waveguide termination J p153
*Carpenter, C.J. Digital-pulse approach to electro-*magnetism A p477
Carroll, Professor J.E., White, I.H., and Linton, R.S. see White, I.H.
Carson, E.R., Finkelstein, L., Land, F., and Westcott, J.H. see Finkelstein, L.
Caruso, G. Heuristic algorithm for the minimisation of generalised Boolean functions E p108
Casey, J.P., and Bansal, R. Dielectrically loaded wire antennas H p103
Castagne, J., Prom, J.L., Sarrabayrouse, G., and Munoz-Yague, A. see Prom, J.L.
Castro, R.D. Solving SPICE problems G p177
Cerri, G., Yeung, C., and Rozzi, T. see Yeung, C.
Chambers, W.G. Clock-controlled shift registers in binary sequence generators E p17
Chambers, W.G., and Gollmann, D. Generators for sequences with near-maximal linear equivalence E p67
Chan, S.-W., Leung, S.S., and Wey, C.-L. Systematic design strategy for concurrent error diagnosable iterative logic arrays E p87
Chandra, , Leong, M.S., and Kooi, P.S. see Leong, M.S.
Chang, Y.N., Chen, C.S., and Wu, J.S. see Chen, C.S.
Chappell, P.H. Current pulses in switched reluctance motor B p224
Charalambous, C. Design of N-dimensional multiphase spherically symmetric FIR digital filters by transformation G p203
Charalambous, C., and Khreishi, H. Minimax design of 2D FIR linear phase digital filters G p194
Charnley, M., and Al-Nuaimi, M.O. see Al-Nuaimi, M.O.
Chen, B.-S., and Hwang, C.-L. see Hwang, C.-L.
Chen, B.-S., and Lin, C.-M. Multipurpose adaptive control in deterministic multivariable systems D p282
Chen, B.S., and Wang, W.J. Multipurpose controller synthesis in LQG optimal systems D d329
Chen, C.S., Wu, J.S., and Chang, Y.N. Criteria for interfeeder switching in distribution systems C p461
Chen, K.-C., Wu, W.-T., and Chu, Y.T. see Wu, W.-T.
Chen, M.-Y., and Hwang, C. see Hwang, C.
Chen, S., Lin, J., and Roberts, P.D. see Lin, J.
Chen, Shi-Lin, Tsao, Ta-Peng, Huang, Ching-Lien, and Lin, Wei-Cheng see Tsao, Ta-Peng
Chen, T.C. Optimised design of even-order optical low-pass and high-pass multilayer filters by method of coefficient matching J p359
Chen, T.C. Optimised design of odd-order optical lowpass and highpass multilayer filters by method of coefficient matching J p166
Chen, W., Mavor, J., Denyer, P.B., and Renshaw, D. Superchip architecture for implementing large integrated systems E p137
Chen, X., Prosser, F., and Wu, X. see Prosser, F.
Chen, Xian Adaptive linear-phase complex filtering algorithms F p481 F e576
Cheung, S.W., and Aghvami, A.H. Performance of a 16-ARY DEQAM modem employing a baseband or RF predistorter over a regenerative satellite link F p547
Chew, W.C., and Liu, Q. see Liu, Q.
Chidgey, P.J., Hodgkinson, T.G., Harmon, R.A., and Smith, D.W. see Hodgkinson, T.G.
Chignell, R.J., Jackson, P.A., and Madani, K. Early developments in ground-probing radar at ERA Technology Ltd F p362
Chinnadurai, R., and Kalyanasundaram, N. see Kalyanasundaram, N.
Chit, N.N., and Mason, J.S. Design of minimum phase FIR digital filters G p258
Cho, H.S., and Yun, J.S. see Yun, J.S.
Cho, W.D., and Un, C.K. Convergence behaviour of the first-order multi-sampling digital tanlock loop F p457 F e576
Choi, Y.M. Novel method of measuring dielectric properties at 100 GHz using a groove-guide resonator H p138
Chowdhury, S.K., Bhattacharjee, A.K., Bhadra Chaudhuri, S.R., Mukherjee, A., and Poddar, D.R. see Bhattacharjee, A.K.
Christiansen, P.L., Jensen, N.H., and Skovgaard, O. see Jensen, N.H.
Christodoulou, M.A., and Mertzios, B.G. see Mertzios, B.G.
Christopoulos, C., Thomas, D.W.P., and Wright, A. Scheme, based on travelling-waves, for the protection of major transmission lines C p63
Chu, Y.T., Wu, W.-T., and Chen, K.-C. see Wu, W.-T.
Chua, S.J., and Loh, W.H. Simulation of inhomogeneous broadening and mode-beating effects in semiconductor lasers J p310
Chun, G., Qishan, G., and Andresen, E. see Qishan, G.
Cichocki, A., and Unbehauen, R. Logarithmic and *exponential switched-capacitor convertors and* some of their applications G p58
Ciminiera, L., and Valenzano, A. Low cost serial *multipliers for high-speed specialised processors* E p259 E e340
Clare, J.C., and Bowes, S.R. see Bowes, S.R.
Clark, A.P., and Zhu, Z.C. see Zhu, Z.C.
Clark, C., Hale, K.F., Duggan, R.F., and Jones, B.E. see Hale, K.F.
Clarke, D.W., and Tsang, T.T.C. see Tsang, T.T.C.
Clarke, D.W., and Warwick, K. see Warwick, K.
Clarke, G.D., Malt, A.P.J., and Robinson, P.E. see Malt, A.P.J.
Clarkson, P.J., and Acarnley, P.P. Stability limits for dynamic operation of variable reluctance stepping motor systems B p308
Clarricoats, P.J.B., Bergmann, J., Brown, R.C., and Zhou, H. see Bergmann, J.
Clarricoats, P.J.B., Olver, A.D., and Raghavan, K. see Olver, A.D.
Climer, B. Analysis of suspended microstrip taper baluns H p65
Cloud, D.J., and Kouvaritakis, B. Characteristic decomposition and the multivariable generalisation of predictive self-tuning control D p165
Clouston, E.N., Langsford, P.A., and Evans, S Measurement of anechoic chamber reflections by *time-domain techniques H p93*
Cluett, W.R., Shah, S.L., and Fisher, D.G. Robustness analysis of discrete-time adaptive control *systems using input-output stability theory: a* tutoral D p133
Coffey, T., and Burton, D.P. see Burton, D.P.
Conlon, M., Wilcox, D.J., and Hurley, W.G. see Wilcox, D.J.
Constantinides, A.G., Biggar, M.J., and Morris, O.J. see Biggar, M.J.
Cooper, A., Kahari, W., and Such, R. Image processing for electronic document storage E p196
Cooper, A.R. Parallel architecture modified Booth multiplier G p125
Corbin, M.J., and Jones, J.G. see Jones, J.G.
Correc, P. Design of narrow-linewidth phase-shifted distributed feedback lasers J p64
Coulter, J.R.M., and Emeleus, K.G. see Emeleus, K.G.
Cranny, A.W.J., Brignell, Prof. J.E., and White, N.M. see Brignell, Prof. J.E.
Crawley, D.G., and Amaratunga, G.A.J. 8 × 8 bit pipelined Dadda multiplier in CMOS G p231
Critchley, O.H. The enigma of the engineer. Hero of the industrial revolution: mere henchman in an age of science A p253
Cullen, A.L., and Yeo, S.P. Designing a symmetrical five-port waveguide junction H p17
Cuthbert, L.G., and Olver, A.D. see Olver, A.D.

D

Dakss, M.L., and Melman, P. Two-channel fibre Raman amplification for wavelength division multiplexed systems J p96
Damiano, J.P., Abboud, F., and Papiernik, A. see Abboud, F.
Damper, R.I., Burgess, N., Totton, K.A., and Shaw, S.J. see Burgess, N.
Daniels, D.J., Gunton, D.J., and Scott, H.F. Introduction to Subsurface radar F p278
Darnell, M., Honary, B.K., and Zolghadr, F. Embedded coding technique: principles and theoretical studies F p43
David, A.K. Load forecasting under spot pricing C p369
David, A.K. Optimal consumer response for electricity spot pricing C p378
Davidson, A.M., and Walters, I.R. Linear system reduction using approximate moment matching D p73
Davidson, H.D., Maras, A.M., and Holt, A.G.J. see Maras, A.M.
Davies, A.J., Dutton, J., Turri, R., and Waters, R.T. Effect of humidity and gas density on switching impulse breakdown of short airgaps A p59
Davies, A.J., Rowlands, A.R., Turri, R., and Waters, R.T. Statistical analysis of flashover data using a generalised likelihood method A p79
Davies, E.R. Application of the generalised Hough transform to corner detection E p49

Davies, J., and Rahman, B.M. see Rahman, B.M.
Davies, J.I., Hodson, P.D., Wallis, R.H., and Shephard, H.E. see Hodson, P.D.
Davies, W.S., and Wende, D. Cochannel interference between point-to-point urban microwave radio systems F p225
de la Salle, S., Ho, D., and Grimble, M.J. A research group's CACSD environment A p223
DeMassa, T.A., Sanchez, J.J., and Hsueh, K. see Sanchez, J.J.
DeVore, R.V., Kimball, D.F., Kasten, D.G., and Caldecott, R. RF analysis of a 12-pulse HVDC convertor C p210
Debernardi, P.L., Bava, G.P., Montrosset, I., and Scrivanti, M. see Bava, G.P.
Decoster, D., Verriele, H., Lorriaux, J.L., Legry, P., Gouy, J.P., and Vilcot, J.P. see Verriele, H.
Delisle, G.Y., Fang, D.G., and Yang, J.J. see Fang, D.G.
Demirekler, M., and Üçtuğ, Y. see Üçtuğ, Y.
Denyer, P.B., Chen, W., Mavor, J., and Renshaw, D. see Chen, W.
Desages, A., Romagnoli, J.A., Karim, M.N., and Agamennoni, O.E. see Romagnoli, J.A.
Desgoutte, P., Ongaro, R., and Pillonnet, A. see Ongaro, R.
Dewan, S.B., and Bhat, A.K.S. see *Bhat, A.K.S.*
Dialynas, E.N. Evaluating the approximate probability distributions of load point reliability indices in power distribution networks C p450
Dib, H.M., Shieh, L.S., and Yates, R.E. see Shieh, L.S.
Dickinson, M., and Morris, A.S. Co-ordinate determination and performance analysis for robot manipulators and guided vehicles A p95
Dimolitsas, S., and Gunn, J.E. Modular, offline, full duplex telephone channel simulator for high speed data transceiver evaluation F p155
Diay, S.S., Benaissa, M., Bouridane, A., and Holt, A.G.J. Diminished-1 multiplier for a fast convolver and correlator using the Fermat number transform G p187
Diay, S.S., Benaissa, M., Pajayakrit, A., and Holt, A.G.J. see Benaissa, M.
Dodgson, T.E., and Brewster, R.L. see Brewster, R.L.
Donati, S., Annovazzi-Lodi, V., and Tambosso, T. Magneto-optical fibre sensors for electrical industry: analysis of performances J p372
Drajić, D., Vučetić, B., and Perišić, D. see Vučetić, B.
Drake, D., and Lindon, P. Improvement of current loop response of thyristor DC drive by time-domain approximation B p261
Drake, J.M., and Harbour, M.G. see Harbour, M.G.
Drakos, J.E., Peelo, D.F., Avent, B.L., Giudici, B.C., and Irvine, J.R. see Peelo, D.F.
Driscoll, J.P., and Karia, N. Detection processes for V32 modems using trellis coding F p143
Duggan, J., and Browne, J. ESPNET: expert-system-based simulator of Petri nets D p239
Duggan, R.F., Hale, K.F., Clark, C., and Jones, B.E. see Hale, K.F.
Duncan, G., Huang, X., and Jack, M. see Huang, X.
Duncan, G., and Jack, M.A. Formant estimation algorithm based on pole focusing offering improved noise tolerance and feature resolution F p18
Dutton, J., Davies, A.J., Turri, R., and Waters, R.T. see Davies, A.J.
Dzougaiev, V., Wu, K., and Saguet, P. see Wu, K.

E

Eastman, W.L., Truong, T.K., Reed, I.S., and Hsu, I.S. see Truong, T.K.
Edgcombe, C.J. Synthesis of electrodes for axisymmetric systems A p125
Edwards, D.J., Hawkins, G.J., and McGeehan, J.P. see Hawkins, G.J.
Edwards, D.R. Address as Chairman of the IEE Science, Education & Technology Division: Supertension or superconducting cables: 20 years on — can the UK regain the lead? C p9
El-Amawy, A., and Barada, H. see Barada, H.
El-Kady, M.A., Abu-Elnaga, M.M., and Findlay, R.D. see Abu-Elnaga, M.M.
El-Metwally, M.M., and Farrag, M.A. see Farrag, M.A.
El-Morshedy, A., Khalifa, M., Gouda, O.E., and Habib, S.E.-D. see Khalifa, M.
El-Sayed, M.A.H., and Fikri, M. see Fikri, M.
El-Zayyat, H.M., and Mahmoud, M. Photovoltaic power generators for radio communication systems in Jordan C p385
Elliott, D., and Zhang, W. see Zhang, W.
Elliott, R.S., and Stern, G.J. Shaped patterns from a continuous planar aperture distribution H p366
Ellis, G., Penman, J., and Grieve, M.D. see Penman, J.
Ellis, M.R.E., and Williamson, S. see Williamson, S.
Ellison, A.J. Perception, reality and values: science, conditioning and evidence A p319
Elmasry, M.I., Szabó, K.S.B., and Leask, J.M. see Szabó, K.S.B.
Elsherbeni, A.Z., Stanier, J., and Hamid, M. Eigenvalues of propagating waves in a circular waveguide with an impedance wall H p23
Emeleus, K.G., and Coulter, J.R.M. Surface recombination of ions and cratering by ion impact A p76
Emson, C.R.I. Methods for the solution of open-boundary electromagnetic-field problems A p151
Encinar, J.A., and Rebollar, J.M. see Rebollar, J.M.
Endersby, J.C. The engineer in society (Editorial) A p245
Engelhardt, W., and Siebert, H. see Siebert, H.
Engst, B., LO, Y.T., and Lee, R.Q. see LO, Y.T.
Enjeti, P., Lindsay, J.F., Ziogas, P.D., and Rashid, M.H. New current control scheme for PWM inverters B p172
Er, M.H. Adaptive antenna array under directional and spatial derivative constraints H p414
Er, M.H. Technique for antenna array pattern synthesis with controlled broad nulls H p375
Er, M.H., and Ng, B.P. Aan alternative approach for designing narrowband antenna array processors with broadband capability H p111
Erinmez, I.A., Humphreys, P., and Geeves, S.S. Development of analytical techniques for system damping evaluation C p238
Esteves, N.L., and Gusmão, A.M. see Gusmão, A.M.
Evans, D.J., Margaritis, K., and Bekakos, M.P. see Margaritis, K.
Evans, D.J., and Megson, G.M. see Megson, G.M.
Evans, D.J., and Megson, G.M. Systolic array for the quotient difference algorithm E p60
Evans, P.D., and Mestha, L.K. Analysis of conventional snubber circuits for PWM inverters using bipolar transistors B p180
Evans, S, Clouston, E.N., and Langsford, P.A. see Clouston, E.N.
Evans, W.A., and Rowlands, S.L. Design of a portable thermocouple calibrator A p33

F

Fahmy, M.M., and Rashwan, M.A. see Rashwan, M.A.
Falk, K. Admittance of a longitudinal slot in a ridge waveguide H p263
Fam, W.Z. Poynting vector probe for measuring power at extremely low power factor A p385
Fang, D.G., Yang, J.J., and Delisle, G.Y. Discrete image theory for horizontal electric dipoles in a multilayered medium H p297
Fantini, F., Morandi, C., Niccolai, L., and Gaviraghi, S. see Morandi, C.
Farghal, S.A., Kandil, M.S., and Abdel-Aziz, M.R. Generation expansion planning: an expert system approach C p261
Farrag, M.A., and El-Metwally, M.M. New method for transmission planning using mixed-integer programming C p319
Farrell, M., Waters, C.D., Grainger, R.P., Leahy, P.J., and Mellitt, B. see Waters, C.D.
Farrier, D.R., Jeffries, D.J., and Mardani, R. Theoretical performance prediction of the MUSIC algorithm F p216
Feeney, M.T., Adachi, F., and Parsons, J.D. see Adachi, F.
Fenning, P.J., McCann, D.M., and Jackson, P.D. see McCann, D.M.
Field, Capt. J.C.G. Electromagnetism and semantics A p523
Fielding, T.J., and Latham, R.V. see Latham, R.V.
Fikri, M., and El-Sayed, M.A.H. New algorithm for distance protection of high voltage transmission lines C p436
Findlay, R.D., Abu-Elnaga, M.M., and El-Kady, M.A. see Abu-Elnaga, M.M.
Finkelstein, G., and Pieprzyk, J. see Pieprzyk, J.
Finkelstein, L., Land, F., Carson, E.R., and Westcott, J.H. Systems theory and systems engineering A p401
Finney, A.D., Lazarus, M.J., Smith, I., and Jones, L.L. see Lazarus, M.J.
Fisher, D.G., Cluett, W.R., and Shah, S.L. see Cluett, W.R.
Fleming, R.J., and Irwin, G.W. see Irwin, G.W.
Fletcher, E.D., Kucharska, A.I., Blood, P., and Hulyer, P.J. see Kucharska, A.I.
Fletcher, L.R. Eigenstructure assignment by output feedback in descriptor systems D p302
Flint, I., and Sarma, J. see Sarma, J.
Foda, S., and Agathoklis, P. see Agathoklis, P.
Foo, Y.K. Quantitative design of robust multivariable control systems D d404
Forrest, John R. Address as Chairman of the IEE Electronics Division: Town crier to world seer: a broadcast odyssey F p1
Fossi, M., Gherardelli, M., and Giuli, D. see Gherardelli, M.
Foulds, K.W.H., Tudor, M.J., Andres, M.V., and Naden, J.M. see Tudor, M.J.
Fox, M. Experience with mode-field radius measurements J p211
Franceschetti, G., Mazzarella, G., and Panariello, G. Array synthesis with excitation constraints H p400
Freeman, E.M., Rikabi, J., and Bryant, C.F. see Rikabi, J.
French, P.J., Lian, W., and Middelhoek, S. NMOS flip-flop sensors: a multipurpose digital-output sensor technique D p359
Fukuchi, H. Correlation properties of rainfall rates in the United Kingdom H p83
Fukuchi, H., and Otsu, Y. Available time statistics of rain attenuation on earth-space path H p387
Fuster, A., and Guillen, J.M. Questions of controllability and observability for nonuniformly sampled discrete systems D p248
Fyath, R.S., and O'Reilly, J.J. see O'Reilly, J.J.
Fyath, R.S., and O'Reilly, J.J. Analysis of nonideal solid-state photomultiplier (SSPM) for optical receivers J p423
Fyath, R.S., and O'Reilly, J.J. Frequency response characterisation of superlattice avalanche photodiodes J p413
Fyath, R.S., and O'Reilly, J.J. Multilayer APDS producing up to two impact ionisations per carrier per stage: optical receiver performance analysis J p101
Fyath, R.S., and O'Reilly, J.J. Optical receivers based on superlattice avalanche photodiodes: effect of number of stages J p298
Fyath, R.S., and O'Reilly, Prof. J.J. see O'Reilly, Prof. J.J.

G

Gaitanis, N. TSC-error C/D circuits for SEC/DED product codes E p253
Gamlin, J.F. Engineering education and the school system A p271
Gardioi, F.E. Design and layout of microstrip structures H p145
Garrett, I., Jacobsen, G., and Pedersen, R.J.S. Filtered laser beat-frequency fluctuations J p408
Garrett, I., and Jacobsen, G. see Jacobsen, G.
Garrett, I., and Jacobsen, G. Theoretical analysis of ASK heterodyne optical receivers with tuned front ends J p255
Gates, G.F., Green, A.W., and Boys, J.T. see Green, A.W.
Gaviraghi, S., Morandi, C., Niccolai, L., and Fantini, F. see Morandi, C.
Gawthrop, P.J., and Kharbouch, M. Two-loop self-tuning cascade control D p232
Gazit, Ehud Improved design of the vivaldi antenna H p89
Geeves, S.S., Erinmez, I.A., and Humphreys, P. see Erinmez, I.A.
Gelerman, D., Bura, P., and Ntake, P. see Bura, P.
George, C.F. Unemployment: technological causes, cures and consequences A p313
Georgiev, G.N., and Ivanov, K.P. see Ivanov, K.P.
Gera, A.E. Simple expressions for mutual impedances H p395
Geyi, W., and Hongshi, W. Solution of the resonant frequencies of a cavity resonator by boundary element method (BEM) H p361
Geyi, W., and Hongshi, W. Solution of the resonant frequencies of a microwave dielectric resonator using boundary element method H p333
Ghannouchi, F.M., and Bosisio, R.G. The six-port reflectometer and its complete calibration by four stadard terminations H p285
Gherardelli, M., Giuli, D., and Fossi, M. Sub-optimum adaptive polarisation cancellers for dual-polarisation radars F p60
Gibbard, M.J. Co-ordinated design of multimachine power system stabilisers based on damping torque concepts C p276
Gibson, C.M. Programme of system proving tests and operational experience C p255
Giudici, B.C., Peelo, D.F., Avent, B.L., Drakos, J.E., and Irvine, J.R. see Peelo, D.F.
Giuli, D., Gherardelli, M., and Fossi, M. see Gherardelli, M.
Goel, A.K. Transit times in the high-density interconnections on GaAs-based VHSIC I p129
Goldberg, M., and Wang, L. see Wang, L.
Goldman, H., and Bar-David, I. Analysis and application of the excision CFAR detector F p563
Gollmann, D., and Chambers, W.G. see Chambers, W.G.
Gomaa, L.R. Beam propagation method applied to a step discontinuity in dielectric planar waveguides H p205
Goodwin, G.C., Salgado, M., and Middleton, R. see Salgado, M.
Goodwin, S.C., and Jayawant, B.V. see Jayawant, B.V.
Gorgui-Naguib, R.N. p-adic number theory G p107
Goswami, C.S., and Beale, M. Correlation properties of dual-BCH, Kasami and other sequences for spread-spectrum, multiple-access systems F p114
Gouda, O.E., Khalifa, M., El-Morshedy, A., and Habib, S.E.-D. see Khalifa, M.
Gouta, M., and Kosmopoulos, S.A. Fourier–Bessel error performance analysis of 0M-ary QAM signalling through AWGN and cochannel interferences F p450
Gouy, J.P., Verriele, H., Lorriaux, J.L., Legry, P., Vilcot, J.P., and Decoster, D. see Verriele, H.
Gouzien, P., Soares, R., and Legaud, P. see Soares, R.
Grainger, R.P., Waters, C.D., Farrell, M., Leahy, P.J., and Mellitt, B. see Waters, C.D.
Grant, T., Zhang, Jie, Thiagarajan, V., and Barton, T.H. see Zhang, Jie
Gray, J.O., Valsamis, D., and Owens, D.H. see Valsamis, D.

Green, A.W., Boys, J.T., and Gates, G.F. 3-phase voltage sourced reversible rectifier B p362
Greenwood, J.C., and Satchell, D.W. Miniature silicon resonant pressure sensor D p369
Gregory, K., Kettleborough, J.G., and Smith, I.R. Diakoptic mesh analysis of limited size power supply systems C p124
Gribble, J.J., and Arnold, J.M. Beam propagation method and geometrical optics J p343
Grieve, M.D., Penman, J., and Ellis, G. see Penman, J.
Griffiths, H.D. Conference report Radar 87 F p558
Grimble, M.J. Convergence of explicit LQG self-tuning controllers D p309
Grimble, M.J. Minimax design of optimal stochastic multivariable systems D p436
Grimble, M.J., de la Salle, S., and Ho, D. see de la Salle, S.
Guieu, B., Mellitt, B., Harris, F.W., and Harris, N.R. see Mellitt, B.
Guillen, J.M., and Fuster, A. see Fuster, A.
Guillon, P., and Vigneron, S. see Vigneron, S.
Gummett, P., Trier, P.E., Richards, J., and Wallard, A. see Trier, P.E.
Gunn, J.E., and Dimolitsas, S. see Dimolitsas, S.
Gunton, D.J., Daniels, D.J., and Scott, H.F. see Daniels, D.J.
Gupta, R.P., Wuerfl, J., Hartnagel, H.L., and Khokle, W.S. Influence of gallium in a metallisation on GaAs I p25
Gusmão, A.M., and Esteves, N.L. ENCAP-4: an OQPSK-type modulation technique for digital radio F p105
Guy, R.F.E. General radiation-pattern synthesis technique for array antennas of arbitrary configuration and element type H p241

H

Habbab, I.M.I., Belezinis, P., and Turner, L.F. see Belezinis, P.
Haber, R. Parametric identification of nonlinear dynamic systems based on nonlinear cross-correlation functions D p405
Habib, S.E.-D., Khalifa, M., El-Morshedy, A., and Gouda, O.E. see Khalifa, M.
Hahn, V., Stephan, R.M., and Unbehauen, H. see Stephan, R.M.
Haldar, M.K., and Liew, A.C Alternative solution for the Chowdhuri–Gross model of lightning-induced voltages on power lines C p324
Hale, K.F., Clark, C., Duggan, R.F., and Jones, B.E. High-sensitivity optopneumatic convertor D p348
Halim, Mohamed A. Abdel, and Manning, C.D. see Manning, C.D.
Hall, C.M., and Hall, P.S. see Hall, P.S.
Hall, P.S., and Hall, C.M. Coplanar corporate feed effects in microstrip patch array design H p180
Halley, P. Fibre optic systems J p383
Halpern, M.E. Modified pole-assignment controller for plant models with exact or near pole-zero cancellation D p189
Hamid, M., Elsherbeni, A.Z., and Stanier, J. see Elsherbeni, A.Z.
Hamid, M., and Ragheb, H.A. see Ragheb, H.A.
Hammond. P., and Baldomir, D. Dual energy methods in electromagnetism using tubes and slices A p167
Hampton, B.F., and Meats, R.J. Diagnostic measurements at UHF in gas insulated substations C p137
Hanyang, W., and Wei, W. Moment method analysis of a feeding system in a slotted-waveguide antenna H p313
Harbour, M.G., and Drake, J.M. Simple *RC* model for integrated multiterminal interconnections G p19
Hardy, A , Streifer, W., and Osiński, M. Chirping effects in phase-coupled laser arrays J p443
Harmon, R.A., Hodgkinson, T.G., Smith, D.W., and Chidgey, P.J. see Hodgkinson, T.G.
Harris, F.W., Mellitt, B., Guieu, B., and Harris, N.R. see Mellitt, B.
Harris, N.R., Mellitt, B., Harris, F.W., and Guieu, B. see Mellitt, B.
Harris, S.E. Symmetry of electromagnetism A p363
Harrison, R.F., and Kouvaritakis, B. Further result on performance degradation for nonlinear multivariable systems D p326
Harrold, M.V., and Lush, D.M. Automatic controls in building services (Commissioned IEE review) B p105
Hart, P.M., and Bonwick, W.J. Harmonic modelling of synchronous machines B p52
Hartnagel, H.L., Gupta, R.P., Wuerfl, J., and Khokle, W.S. see Gupta, R.P.
Hassan, M.F., Badr, R.I., Bernussou, J., and Bilal, A.Y. see Badr, R.I.
Hautus, M.L.J., and van der Wegen, L.L.M. Multipurpose controller synthesis in LQG optimal systems D d329
Hawkins, G.J., Edwards, D.J., and McGeehan, J.P. Tracking systems for satellite communications F p393
Haykin, S., and Weber, P. see Weber, P.
Hein, H., Morris, D., Steppe, H., and Baars, J.W.M. see Morris, D.
Helszajn, J., McDonald, G., and Sutherland, D. E-plane finline circulator using coupled H-plane turnstile resonators H p279
Henkels, W.H. Dynamic capacitance effects in DRAM word lines I p1
Hennache, A., and Stoll, R.L. see Stoll, R.L.
Herniman, J., Allan, D.A., and O'Sullivan, P.J. Optical annealing of ohmic contacts for GaAs high-speed integrated circuits using a zirconium diboride barrier layer I p67
Herro, M.A., and Nowack, J.M. Simulated Viterbi decoding using importance sampling F p133
Hirayama, K., and Koshiba, M. see Koshiba, M.
Hitchins, D.K. Systems creativity A p407
Ho, D., de la Salle, S., and Grimble, M.J. see de la Salle, S.
Ho, P.T., and Tso, S.K. Software control of static reactive current compensators C p518
Hobson, R.F. High-level microprogramming support embedded in silicon E p73
Hodgkinson, T.G., Harmon, R.A., Smith, D.W., and Chidgey, P.J. In-phase and quadrature detection using 90° optical hybrid receiver: experiments and design considerations J p260
Hodson, P.D., Wallis, R.H., Davies, J.I., and Shephard, H.E. InGaAs *pin* photodiodes on recessed semi-insulating GaAs substrates J p2
Hogg, B.W., and Wu, Q.H. see Wu, Q.H.
Holt, A.G.J., Benaissa, M., Pajayakrit, A., and Dlay, S.S. see Benaissa, M.
Holt, A.G.J., Boussakta, S., Shakaff, A.Y.Md., and Marir, F. see Boussakta, S.
Holt, A.G.J., Dlay, S.S., Benaissa, M., and Bouridane, A. see Dlay, S.S.
Holt, A.G.J., Maras, A.M., and Davidson, H.D. see Maras, A.M.
Holt, A.G.J., Shakaff, A.Y.Md., and Pajayakrit, A. see Shakaff, A.Y.Md.
Holt, A.G.J., and Boussakta, S. see Boussakta, S.
Honary, B.K., Darnell, M., and Zolghadr, F. see Darnell, M.
Hongshi, W., and Geyi, W. see Geyi, W.
Hori, N., Nikiforuk, P.N., Kanai, K., and Uchikado, S. On the improvement of an adaptive observer for multi-output systems D p67
Hsu, I.S., Truong, T.K., Eastman, W.L., and Reed, I.S. see Truong, T.K.
Hsueh, K., Sanchez, J.J., and DeMassa, T.A. see Sanchez, J.J.
Huang, Ching-Lien, Tsao, Ta-Peng, Chen, Shi-Lin, and Lin, Wei-Cheng see Tsao, Ta-Peng
Huang, X., Duncan, G., and Jack, M. Formant estimation system based on weighted least-squares lattice filters F p539
Hulyer, P.J., Kucharska, A.I., Blood, P., and Fletcher, E.D. see Kucharska, A.I.
Hume, A.L., and Auchterlonie, L.J. Extension of Open Resonator Measurement Technique to achieve fast detailed results over wide bandwidth (8–12 GHz) H p431
Humphreys, D.A., and Lobbett, R.A. Investigation of an optoelectronic nonlinear effect in a GaInAs photodiode, and its application in a coherent optical communication system J p45
Humphreys, D.A., and Moseley, A.J. GaInAs photodiodes as transfer standards for picosecond measurements J p146
Humphreys, M.J., and Nuttall, K.I. Some observations on the failure locus of *npn* transistors and its improvement using graded collector structures I p85
Humphreys, P., Erinmez, I.A., and Geeves, S.S. see Erinmez, I.A.
Hunter, G.P., and Ramsden, V.S. New improved modulation method for a cycloconvertor driving an induction motor B p324
Hurley, W.G., Wilcox, D.J., and Conlon, M. see Wilcox, D.J.
Hussey, C.D., and Martinez, F. see Martinez, F.
Hwang, C., and Chen, M.-Y. Stable linear system reduction via a multipoint squared-magnitude continued-fraction expansion D p441
Hwang, C.-L., and Chen, B.-S. Adaptive control of optimal model matching in H^{∞}-norm space D p295
Hwang, J.S., Wu, C.-Y., and Li, C. see Wu, C.-Y.

I

Infis, A.H., and Moore, W.R. Economic approach to fault-tolerant synchronisation E p82
Irvine, J.R., Peelo, D.F., Avent, B.L., Drakos, J.E., and Giudici, B.C. see Peelo, D.F.
Irving, M.R., Rafian, M., and Sterling, M.J.H. see Rafian, M.
Irwin, G.W., and Fleming, R.J. Analysis of coloured filter controllers for bank-to-turn CLOS guidance D p486
Isaksson, A. Digital protective relaying through recursive least-squares identification C p441
Israelsson, S., Oladiran, E. O., and Pisler, E. see Oladiran, E. O.
Itoh, H., Watanabe, M., Mukai, S., and Yajima, H. see Watanabe, M.
Itoh, R. Simplified configuration of GTO current source inverter for induction motor drives B p218
Ivanov, K.P., and Georgiev, G.N. Kummer and Tricomi functions for analysis of circular gyrotropic waveguides with azimuthal magnetisation H p125
Iwao, Sasase,, Kuang-Tsan, Wu,, and Kamilo, Feher, see Kuang-Tsan, Wu,

J

Jack, M., Huang, X., and Duncan, G. see Huang, X.
Jack, M.A., Sutherland, A.M., and Laver, J. see Sutherland, A.M.
Jack, M.A., and Duncan, G. see Duncan, G.
Jackson, D.F. Review of physical diagnostic techniques in medicine and biology: technical progress and future requirements A p375
Jackson, P.A., Chignell, R.J., and Madani, K. see Chignell, R.J.
Jackson, P.D., McCann, D.M., and Fenning, P.J. see McCann, D.M.
Jackson, R.J., and Tavner, P.J. see Tavner, P.J.
Jacobsen, G., Garrett, I., and Pedersen, R.J.S. see Garrett, I.
Jacobsen, G., and Garrett, I. see Garrett, I.
Jacobsen, G., and Garrett, I. Theoery for heterodyne optical ASK receivers using square-law detection and postdetection filtering J p100
Jain, S. Measurement of threshold voltage and channel length of submicron MOSFETs I p162
James, J.R., and Andrasic, G. Superimposed dichroic microstrip antenna arrays H p304
Jamid, H.A., and Al-Bader, S.J. see Al-Bader, S.J.
Jang, W.-Y., Wu, C.-Y., and Wu, H.-J. see Wu, C.-Y.
Jankovic, N.D., and Karamarkovic, J.P. Analytical model for the effective recombination velocity at an arbitrarily doped high–low junction I p136
Jasmon, G.B., and Mohamed, A. see Mohamed, A.
Jayawant, B.V. Are we in control? D p1
Jayawant, B.V., and Goodwin, S.C. Sensors and transducers (Editorial) D p333
Jefferies, D.G. Address as Chairman of the IEE Management & Design Division: Managing a business in the public sector A p13
Jeffries, D.J., Farrier, D.R., and Mardani, R. see Farrier, D.R.
Jen, C.-W., and Jou, S.-J. see Jou, S.-J.
Jensen, N.H., Christiansen, P.L., and Skovgaard, O. On period doubling bifurcations in semiconductor lasers J p285
Jezierski, A.F., and Laybourn, P.J.R. Integrated semiconductor ring lasers J p17
Jiali, Q., and Jones, G.R. Arc transfer in a rotary arc circuit breaker C p511
Johns, A.T., and Walker, E.P. Co-operative research into the engineering and design of a new digital directional comparison scheme C p334
Johnstone, K.K., and Butcher, J.B. see Butcher, J.B.
Jones, B.E., Hale, K.F., Clark, C., and Duggan, R.F. see Hale, K.F.
Jones, B.K., and Abdala, M.A. see Abdala, M.A.
Jones, B.K., and Russell, P.C. Temperature dependence of the MOS mobility degradation I p94
Jones, E.V., and Nazir Al-Subbagh, M. see Nazir Al-Subbagh, M.
Jones, G.R., and Jiali, Q. see Jiali, Q.
Jones, J.G., and Corbin, M.J. Analytical redundancy using band-limiting filters D p257
Jones, L.L., Lazarus, M.J., Smith, I., and Finney, A.D. see Lazarus, M.J.
Jones, R.E., Naden, J.M., and Neat, R.C. Optical-fibre sensors using micromachined silicon resonant elements D p353
Jones, S. Design, selection and implementation of a content-addressable memory for a VLSI CMOS chip architecture E p165
Jou, S.-J., and Jen, C.-W. Design of a systolic array system for linear state equations G p211
Jovičević, S., and Stanković, LJ. see Stanković, LJ.
Jun, Y.-H., and Park, S.-B. Piecewise polynomial models for MOSFET DC characteristics with continuous first order derivative G p241
Junkin, G., and Anderson, A.P. Limitations in microwave holographic synthetic aperture imaging over a lossy half-space F p321
Junyent, G., Ruiz-Moreno, S., Soneira, M.J., and Usandizaga, J.R. see Ruiz-Moreno, S.

K

Kabilafkas, D., and Turner, L.F. New class of double inductive binary error correcting codes based on the class of Reed–Muller codes F p507
Kahari, W., Cooper, A., and Such, R. see Cooper, A.
Kajfez, D. Dual resonance H p141
Kalatizadeh, Y., Parini, C.G., Brain, D., Olver, A.D., and Raghavan, K. see Parini, C.G.
Kalyanasundaram, N., and Chinnadurai, R. Large-signal field analysis of an O-type travelling wave amplifier. Part 3: Three-dimensional electron motion I p59
Kamilo, Feher,, Kuang-Tsan, Wu,, and Iwao, Sasase, see Kuang-Tsan, Wu,
Kanai, K., Hori, N., Nikiforuk, P.N., and Uchikado, S. see Hori, N.
Kandil, M.S., Farghal, S.A., and Abdel-Aziz, M.R. see Farghal, S.A.
Kappeler, F., Wolf, Th., Stegmüller, B., and Amann, M.-C. see Wolf, Th.

Karamarkovic, J.P., and Jankovic, N.D. see Jankovic, N.D.
Karia, N., and Driscoll, J.P. see Driscoll, J.P.
Karim, M.N., Romagnoli, J.A., Agamennoni, O.E., and Desages, A. see Romagnoli, J.A.
Karwowski, A. Closed-form approximation to the bounded part of the exact kernel of a cylindrical antenna integral equation H p210
Kasten, D.G., DeVore, R.V., Kimball, D.F., and Caldecott, R. see DeVore, R.V.
Kayafas, E.A., Bourkas, P.D., and Machias, A.V. see Bourkas, P.D.
Keir, A.M., Wight, D.R., and Pryce, G.J. see Wight, D.R.
Kelly, R.G. Workshop teaching: an experiment in engineering education A p113
Kemhadjian, H., and Mhango, G.M. Effect of HCl/O_2 and O_2 dry environments on the distribution of boron in oxide and silicon from thermally deposited boron I p159
Kendall, P.C., Benson, T.M., and Stern, M.S. see Benson, T.M.
Kendall, P.C., Stern, M.S., and Robson, P.N. A new curvature loss formula of Huygens-type for rib waveguides J p11
Kettleborough, J.G., Gregory, K., and Smith, I.R. see Gregory, K.
Khalid, K.B., Maclean, T.S.M., Razaz, M., and Webb, P.W. Analysis and optimal design of microstrip sensors H p187
Khalifa, M., El-Morshedy, A., Gouda, O.E., and Habib, S.E.-D. New monitor for pollution on power line insulators Part 2: Simulated field tests C p24
Khan, I.A., Ahmed, M.T., and Parveen, T. Novel wide-range electronically tunable ideal grounded inductance G p104
Kharbouch, M., and Gawthrop, P.J. see Gawthrop, P.J.
Khassem, M.S., Al-Khalili, A.J., and Al-Khalili, D. see Al-Khalili, A.J.
Khokle, W.S., Gupta, R.P., Wuerfl, J., and Hartnagel, H.L. see Gupta, R.P.
Khokle, W.S., Rajopadhye, N.R., Singh, M., and Raja, N.K.L. see Rajopadhye, N.R.
Khorasani, K., and Pai, M.A. Two time scale decomposition and stability analysis of power systems D p205
Khreishi, H., and Charalambous, C. see Charalambous, C.
Kidd, P.T. Technology and engineering design: shaping a better future or repeating the mistakes of the past? A p297
Kildal, P.-S. Gaussian beam model for aperture-controlled and flareangle-controlled corrugated horn antennas H p237
Kildal, Per-Simon Bandwidth of a square hard horn H p275
Kimball, D.F., DeVore, R.V., Kasten, D.G., and Caldecott, R. see DeVore, R.V.
King, R.J., Raine, W.W., and Baines, J.G. see Raine, W.W.
Knee, M.J. Estimating the conditional entropy of a digital television signal F p431
Kolla, S.R. Block pulse functions based algorithm for symmetrical components caiculation C p487
Kooi, P.S., Leong, M.S., and Chandra, see Leong, M.S.
Koomen, J.J.M., Veenstra, P.K., and Beenker, F.P.M. see Veenstra, P.K.
Korn, I. Error probability of offset differential phase shift keying with intersymbol and adjacent channel interference F p175
Koshiba, M., and Hirayama, K. Application of finite-element method to arbitrarily shaped discontinuities in a dielectric slab waveguide H p8
Kosmopoulos, S.A., and Gouta, M. see Gouta, M.
Kothari, M.L., and Nanda, J. Application of optimal control strategy to automatic generation control of a hydrothermal system D p268
Kouvaritakis, B., and Cloud, D.J. see Cloud, D.J.
Kouvaritakis, B., and Harrison, R.F. see Harrison, R.F.
Krakowski, M.R. On certain properties of the electric vector potential in eddy-current problems. Part 2 A e432
Kriezis, E.E., and Panas, S.M. see Panas, S.M.
Krishnamurthy, M.R., Ammasai Gounden, N., and Subbiah, M. see Ammasai Gounden, N.
Kuang-Tsan, Wu,, Iwao, Sasase,, and Kamilo, Feher, Class-IV PRS above the Nyquist rate F p183
Kucharska, A.I., Blood, P., Fletcher, E.D., and Hulyer, P.J. Bistability in inhomogeneously pumped quantum well laser diodes J p31
Kumar, K.B., and Pandharipande, V.M. Computer-aided modelling of discrete high-frequency transistors H p171
Kuriyan, Annie, Murthy, S.S., and Nagaraj, H.S. see Murthy, S.S.
Kwan, H.K., and Okullo-Oballa, T.S. Systolic array implementation of a decimator and an interpolator E p70

L

LO, Y.T., Engst, B., and Lee, R.Q. Simple design formulas for circulatory polarised microstrip antennas H p213
Lakshman, M., and Wilson, S.G. see Wilson, S.G.
Land, F., Finkelstein, L., Carson, E.R., and Westcott, J.H. see Finkelstein, L.
Langaford, P.A., Clouston, E.N., and Evans, S see Clouston, E.N.
Latham, R.V., and Fielding, T.J. 'Local' conditioning of broad-area vacuum-insulated high-voltage electrodes A p508
Latre, L.G., Mendes, R.S., and Amaral, W.C. see Mendes, R.S.
Lattarulo, F. How the electrical properties of soil affect the surge performance of buried long systems A p51
Lau, K.H. Loss calculations for rectangular coaxial lines H p207
Laver, J., Sutherland, A.M., and Jack, M.A. see Sutherland, A.M.
Lawson, S.S., and Matharu, P.S. see Matharu, P.S.
Laybourn, P.J.R., and Jezierski, A.F. see Jezierski, A.F.
Lazarus, M.J., Rabah, K.V.O., and Ripley, P.M. Stabilised high power MOSFET modules I p155
Lazarus, M.J., Smith, I., Jones, L.L., and Finney, A.D. Output characteristics of insulated gate bipolar transistor modules and improvement with substrate control I p97
Lea, R.M., and Bolouri, H.S. Fault tolerance: step towards WSI E p289
Leahy, P.J., Waters, C.D., Farrell, M., Grainger, R.P., and Mellitt, B. see Waters, C.D.
Leask, J.M., Szabó, K.S.B., and Elmasry, M.I. see Szabó, K.S.B.
Lee, R.Q., LO, Y.T., and Engst, B. see LO, Y.T.
Lee, S.-H., and Lee, T.-T. see Lee, T.-T.
Lee, T.-T., and Lee, S.-H. Synthesis of control laws with specified gain and phase margin and poles region D p474
Legaud, P., Soares, R., and Gouzien, P. see Soares, R.
Legry, P., Verriele, H., Lorriaux, J.L., Gouy, J.P., Vilcot, J.P., and Decoster, D. see Verriele, H.
Leonard, P.J., and Rodger, D. Some aspects of two- and three-dimensional transient-eddy-current modelling using finite elements and single-step time-marching algorithms A p159
Leong, H.W., and Liu, C.L. Discretionary channel routing G p45
Leong, M.S., Kooi, P.S., and Chandra, Radiation from a flanged parallel-plate waveguide: Solution by moment method with inclusion of edge condition H p249
Leu, M.C., Scorza, E.V., and Bartel, D.L. Characteristics and optimal design of variable airgap linear force motors B p341
Leung, S.S., Chan, S.-W., and Wey, C.-L. see Chan, S.-W.
Levine, E., Shtrikman, S., and Treves, D. Double-sided printed arrays with large bandwidth H p54
Lewis, F.L., Mertzios, B.G., and Vachtsevanos, G. see Mertzios, B.G.
Li, C., Wu, C.-Y., and Hwang, J.S. see Wu, C.-Y.
Li, H.F., Probst, D.K., and Prasad, R.N. Traversing the VLSI design hierarchy for a new, fast systolic stack E p25
Li, Z. Discrete-time adaptive control for time-varying systems subject to unknown fast time-varying deterministic disturbances D p445
Lian, W., French, P.J., and Middelhoek, S. see French, P.J.
Liang, X., and Martens, G.O. Active network for correcting impulse-voltage measurements A p487
Liaw, J.-M., Sun, L.-F., and Parng, T.-M. see Sun, L.-F.
Lidgate, D. The engineer in society A p247
Lidgate, D., and Amir, B.H. Optimal operational planning for a hydro-electric generation system C p169
Lidgate, D., and Askarian Abyaneh, H. Computer assessment of IDMT relay performance for phase and earth faults on interconnected power systems C p157
Liebsch, W., and Zier, D. Processor system for real-time video signal processing E p181
Liew, A.C., and Haldar, M.K. see Haldar, M.K.
Lin, C.-M., and Chen, B.-S. see Chen, B.-S.
Lin, J., Chen, S., and Roberts, P.D. Modified algorithm for steady-state integrated system optimisation and parameter estimation D p119
Lin, W., and Liu, M.-H. see Liu, M.-H.
Lin, Wei-Cheng, Tsao, Ta-Peng, Chen, Shi-Lin, and Huang, Ching-Lien see Tsao, Ta-Peng
Lindon, P., and Drake, D. see Drake, D.
Lindsay, J.F., Enjeti, P., Ziogas, P.D., and Rashid, M.H. see Enjeti, P.
Linton, R.S., White, I.H., and Carroll, Professor J.E. see White, I.H.
Lister, P.F., and Bishop, M.L. General waveform shape analyser E p241
Litva, J., Reilly, J., and Bauman, P. see Reilly, J.
Liu, C.L., and Leong, H.W. see Leong, H.W.
Liu, L., and Sinha, N.K. Adaptive state tracking D p429
Liu, M.-H., and Lin, W. Multivariable self-tuning control with decoupling for robotic manipulators D p43
Liu, Q., and Chew, W.C. Curve-fitting formulas for fast determination of accurate resonant frequency of circular microstrip patches H p289
Lo, K.L., Salem, M.M., McColl, R.D., and Moffatt, A.M. Two-level state estimation for large power system Part 1: Algorithms C p299
Lo, K.L., Salem, M.M., McColl, R.D., and Moffatt, A.M. Two-level state estimation for large power system. Part 2: Computational experience C p309
Lo, K.W., and Vu, T.B. Improving performance of monopulse phased array in direction finding H p391
Lobbett, R.A., and Humphreys, D.A. see Humphreys, D.A.
Loh, W.H., and Chua, S.J. see Chua, S.J.
Lorriaux, J.L., Verriele, H., Legry, P., Gouy, J.P., Vilcot, J.P., and Decoster, D. see Verriele, H.
Lowery, A.J. Model for multimode picosecond dynamic laser chirp based on transmission line laser model J p126 J p297
Lowery, A.J. New inline wideband dynamic semiconductor laser amplifier model J p243
Lush, D.M., and Harrold, M.V. see Harrold, M.V.
Lynch, A.C. History of the electrical units and early standards A d88

M

MacLaren, R.F.B. Testing of power system stabilisers C p251
Machias, A.V., Bourkas, P.D., and Kayafas, E.A. see Bourkas, P.D.
Maclean, T.S.M., Khalid, K.B., Razaz, M., and Webb, P.W. see Khalid, K.B.
Macnamara, T.M. Positions and magnitudes of fixed phase shifters in Butler matrices incorporating 90° hybrids H p359
Madani, K., Chignell, R.J., and Jackson, P.A. see Chignell, R.J.
Mahmoud, M., and El-Zayyat, H.M. see El-Zayyat, H.M.
Mahony, J.D. Static fringing capacitance of a dielectric loaded coaxial termination A p448
Majithia, J.C., and Majumdar, B. see Majumdar, B.
Majumdar, B., and Majithia, J.C. Performance evaluation of a clustered multiprocessor organisation using an approximate Markov model E p222
Malt, A.P.J., Clarke, G.D., and Robinson, P.E. Computer-based supervisory control and energy management system for the city of Cape Town C p41
Mamola, G., Alcuri, L., and Randazzo, E. see Alcuri, L.
Mandojana, J.C., and Ambardar, A. Computation of time response for linear networks: a novel approach G p155
Manning, C.D., and Halim, Mohamed A. Abdel New dynamic inductance concept and its application to synchronous machine modelling B p231
Maras, A.M., Davidson, H.D., and Holt, A.G.J. Optimum threshold diversity reception of binary noncoherent frequency shift keying F p560
Maratos, N.G. Algorithm for design centering based on use of sensitivity information G p11
Mardani, R., Farrier, D.R., and Jeffries, D.J. see Farrier, D.R.
Margaritis, K., Bekakos, M.P., and Evans, D.J. Pyramidical pipelining of AO cells for computing successive matrix powers J p276
Marir, F., Boussakta, S., Shakaff, A.Y.Md., and Holt, A.G.J. see Boussakta, S.
Marsh, J.F., and Azzam, M. MCHSE: a versatile framework for the design of two-level power system state estimators C p291
Marsh, J.O. The role of the IEE in the advancement of technical education in Britain up to 1924 A p266
Marsland, J.S., and Woods, R.C. Lucky drift models of multilayered structures and approximate forms of lucky drift expressions J p165
Martens, G.O., and Liang, X. see Liang, X.
Martinez, F., and Hussey, C.D. (E)ESI determination from mode-field diameter and refractive index profile measurements on single-mode fibres J p202
Marzocca, J., Bernard, G., and Perrissin, G. see Bernard, G.
Mason, J.S., and Artym, R. see Artym, R.
Mason, J.S., and Chit, N.N. see Chit, N.N.
Matharu, P.S., and Lawson, S.S. Reconfigurable programmable architecture for cascaded unit elements and lattice WDFs G p181
Mathur, S.P., Sinha, A.K., and Sinha, A.K. Design of microstrip exponentially tapered lines to match helical antennas to standard coaxial transmission lines H p272
Matsushima, Yuichi, Usami, Masashi, Akiba, Shigeyuki, and Utaka, Katsuyuki see Usami, Masashi
Mavor, J., Chen, W., Denyer, P.B., and Renshaw, D. see Chen, W.
Maziar, C.M., Sadra, K., and Streetman, B.G. see Sadra, K.
Mazzarella, G., Franceschetti, G., and Panariello, G. see Franceschetti, G.
McCann, D.M., Jackson, P.D., and Fenning, P.J. Comparison of the seismic and ground probing radar methods in geological surveying F p380

McColl, R.D., Lo, K.L., Salem, M.M., and Moffatt, A.M. see Lo, K.L.
McCormick, A.H.I., and Sangster, A.J. see Sangster, A.J.
McCowen, A., Shaari, S.B.H., and Board, K. Transient analysis of Schottky-barrier diodes I p71
McCowen, A., Shaari, S.B.H., and Board, K. Transient analysis of a triangular-barrier bulk unipolar diode I p107
McDonald, G., Helszajn, J., and Sutherland, D. see Helszajn, J.
McGeehan, J.P., Hawkins, G.J., and Edwards, D.J. see Hawkins, G.J.
McLean, G.W. Review of recent progress in linear motors B p380
McLean, K.J. Electrostatic precipitators (Commissioned IEE review) A p347
McNamara, D.A. Synthesis of sum and difference patterns for two-section monopulse arrays H p371
McNamara, Derek A. Synthesis of sub-arrayed monopulse linear arrays through matching of independently optimum sum and difference excitations H p293
Meats, R.J., and Hampton, B.F. see Hampton, B.F.
Megson, G.M., and Evans, D.J. see Evans, D.J.
Megson, G.M., and Evans, D.J. Matrix power generation using an optical reduced-bandwidth systolic array J p435
Mehler, M.J. Application of spherical wave expansions to direct GO far field synthesis H p41
Mehler, M.J. Spherical wave expansions for shaped beam synthesis H p327
Meissner, P., and Pa'zak, E. see Patzak, E.
Mellitt, B., Harris, F.W., Guieu, B., and Harris, N.R. Inductive interference effects in the Hong Kong Island Line signalling system B p41
Mellitt, B., Waters, C.D., Farrell, M., Grainger, R.P., and Leahy, P.J. see Waters, C.D.
Mellitt, B., and Mouneimne, Z.S. see Mouneimne, Z.S.
Mellor, D.J., Allen, N.L., and Bower, S. see Allen, N.L.
Melman, P., and Dakss, M.L. see Dakss, M.L.
Mendes, R.S., Amaral, W.C., and Latre, L.G. Determination of weighting polynomials in generalised minimum variance controllers D p21
Merrifield, B.C., Roberts, J.B.G., Simpson, P., and Ward, J.S. see Roberts, J.B.G.
Mertzios, B.G., Lewis, F.L., and Vachtsevanos, G. Analysis of singular systems using orthogonal functions D p323
Mertzios, B.G., and Christodoulou, M.A. Decoupling and data sensitivity in singular systems D p106
Mertzios, B.G., and Syrmos, V.L. Implementation of digital filters via VLSI array processors G p78
Mestha, L.K., and Evans, P.D. see Evans, P.D.
Mhango, G.M., and Kemhadjian, H. see Kemhadjian, H.
Middelhoek, S., French, P.J., and Lian, W. see French, P.J.
Middleton, R., Salgado, M., and Goodwin, G.C. see Salgado, M.
Midoun, A., and Bowes, S.R. see Bowes, S.R.
Millar, C.A., Miller, I.D., Mortimore, D.B., Ainslie, B.J., and Urquhart, P. Fibre laser with adjustable fibre reflector for wavelength tuning and variable output coupling J p303
Millard, R.K., Monk, C.R., and Prys-Roberts, C. Self-tuning control of hypotension during ENT surgery using a volatile anaesthetic D p95
Miller, D.M., and Bate, J.A. see Bate, J.A.
Miller, I.D., Millar, C.A., Mortimore, D.B., Ainslie, B.J., and Urquhart, P. see Millar, C.A.
Miyazawa, S., Nakamura, F., and Yamada, N. Effective approximations suitable for the control algorithm of microprocessor-based cycloconvertor B p159
Mo, S.H., and Norton, J.P. Parameter-bounding identification algorithms for bounded-noise records D p127
Moaveni, M.K. Diffraction characteristics of metallic reflection gratings J p318
Moffatt, A.M., Lo, K.L., Salem, M.M., and McColl, R.D. see Lo, K.L.
Mohamed, A., and Jasmon, G.B. Realistic power system security algorithm C p98
Mohamed, E.A., and Swift, G.W. Prediction of DC load-rejection dynamic overvoltages using pattern recognition C p480
Monk, C.R., Millard, R.K., and Prys-Roberts, C. see Millard, R.K.
Montrosset, I., Bava, G.P., Debernardi, P.L., and Scrivanti, M. see Bava, G.P.
Moore, W.R., and Infis, A.H. see Infis, A.H.
Morandi, C., Niccolai, L., Fantini, F., and Gaviraghi, S. ECL fault modelling E p312
Moreno, E., and Ares, F. see Ares, F.
Moreno, E., and Rey, C. Calculation of the driving-point impedance of a two-terminal network by the dual variational method G p97
Morgan, S.B., and Beaujean, D.A. see Beaujean, D.A.
Morris, A.S., and Dickinson, M. see Dickinson, M.
Morris, D., Hein, H., Steppe, H., and Baars, J.W.M. Phase retrieval radio holography in the Fresnel region: Tests on the 30 m telescope at 86 GHz H p61
Morris, O.J., Biggar, M.J., and Constantinides, A.G. see Biggar, M.J.
Mortimore, D.B., Millar, C.A., Miller, I.D., Ainslie, B.J., and Urquhart, P. see Millar, C.A.
Moseley, A.J., and Humphreys, D.A. see Humphreys, D.A.
Moukarzel, I.K., and Vidallon, C.M. Gradient approximation method for circuit optimisation G p129
Mouneimne, Z.S., and Mellitt, B. Modelling of inverter-controlled asynchronous drives for system simulation in DC railways B p210
Mudge, S.K., and Patton, R.J. Analysis of the technique of robust eigenstructure assignment with application to aircraft control D p275
Mukai, S., Watanabe, M., Itoh, H., and Yajima, H. see Watanabe, M.
Mukherjee, A., Bhattacharjee, A.K., Bhadra Chaudhuri, S.R., Poddar, D.R., and Chowdhury, S.K. see Bhattacharjee, A.K.
Munoz-Yague, A., Prom, J.L., Castagne, J., and Sarrabayrouse, G. see Prom, J.L.
Murgatroyd, P.N. Optimal designs for multilayer air-cored toroidal inductors with circular windows B p202
Murthy, S.S., Nagaraj, H.S., and Kuriyan, Annie Design-based computational procedure for performance prediction and analysis of self-excited induction generators using motor design packages B p8
Murty, Y.V.V.S., Smolinski, W.J., and Sivakumar, S. Design of a digital protection scheme for power transformers using optimal state observers C p224
Myles, A. British system operation experience C p233

N

Naden, J.M., Jones, R.E., and Neat, R.C. see Jones, R.E.
Naden, J.M., Tudor, M.J., Andres, M.V., and Foulds, K.W.H. see Tudor, M.J.
Nagaraj, H.S., Murthy, S.S., and Kuriyan, Annie see Murthy, S.S.
Nahman, J.M. Proximity effects on the ground fault current distribution within the earthing system formed by a substation and the associated transmission lines C p497
Najim, K. Multivariable control of a liquid–liquid extraction column using a probabilistic automaton D p479
Nakajima, M., and Umeda, H. see Umeda, H.
Nakamura, F., Miyazawa, S., and Yamada, N. see Miyazawa, S.
Nanda, J., and Kothari, M.L. see Kothari, M.L.
Napieralski, A., and Pompignac, F. Thermal CAD of power hybrid devices using light computer means G p34
Narayana, C.L., Azzawi, F.J. Al, and Baldawi, F.F. Al see Azzawi, F.J. Al
Navon, U., Zur, I., and Weiner, D. Simulation model for optimising energy allocation to hydroelectric and thermal plants in a mixed thermal/hydro-electric power system C p182
Nazir Al-Subbagh, M., and Jones, E.V. Optimum patterns for frame alignment F p594
Neat, R.C., Jones, R.E., and Naden, J.M. see Jones, R.E.
Nehorai, Arye, and Stoica, Petre see Stoica, Petre
Ng, B.P., and Er, M.H. see Er, M.H.
Nguyen, D.T., and Andrews, M. see Andrews, M.
Nguyen, D.T., and Xu, Ding-Yi Scale based algorithm for recognition of blurred planar objects E p307
Niccolai, L., Morandi, C., Fantini, F., and Gaviraghi, S. see Morandi, C.
Nicholson, H., and Wing, S.K. see Wing, S.K.
Nickel, U. Algebraic formulation of Kumaresan-Tufts superresolution method, showing relation to ME and MUSIC methods F p7
Niezgoda, G., Wong, K.M., and Walker, R.S. see Wong, K.M.
Nikiforuk, P.N., Hori, N., Kanai, K., and Uchikado, S. see Hori, N.
Nin Cheung, Hon, and Po Wong, Kit see Po Wong, Kit
Norriss, T.B., and Bodger, P.S. see Bodger, P.S.
Norton, J.P., and Mo, S.H. see Mo, S.H.
Nowack, J.M., and Herro, M.A. see Herro, M.A.
Ntake, P., Bura, P., and Gelerman, D. see Bura, P.
Nuttall, K.I., and Humphreys, M.J. see Humphreys, M.J.
Nwokah, O.D.I. Quantitative design of robust multivariable control systems D d404
Nwokah, O.D.I. Quatitative design of robust multivariable control systems D p57

O

O'Connell, K.J. Uses and abuses of technology A p286
O'Kelly, D. Flux penetration and losses in steel plate with nonsinusoidal magnetisation A p193
O'Kelly, D. Losses and flux penetration in non-grain-oriented low-loss steel with nonsinusoidal excitation A p199
O'Reilly, J.J., and Fyath, R.S. see Fyath, R.S.
O'Reilly, J.J., and Fyath, R.S. Analysis of the influence of dark current on the performance of optical receivers employing superlattice APDs J p109
O'Reilly, Prof. J.J., and Fyath, R.S. New APD-based receivers providing tolerance to alignment jitter for binary optical communications J p119
O'Sullivan, P.J., Herniman, J., and Allan, D.A. see Herniman, J.
Odell, K.M. Address as Chairman of the IEE Power Division: Power projects: the role of the contractor C p1
Ohki, M., and Saito, S. Impulse flashover along the outer surface of a cylindrical dielectric solid with a gas layer inside A p99 A e447
Ohno, K., and Adachi, F. see Adachi, F.
Okullo-Oballa, T.S., and Kwan, H.K. see Kwan, H.K.
Oladiran, E.O., Pisler, E., and Israelsson, S. New lightning flash counter and calibration circuit with improved discrimination of cloud and ground discharges A p22
Oliver, C.J. Representation of radar sea clutter F p497
Olver, A.D., Clarricoats, P.J.B., and Raghavan, K. Dielectric cone loaded horn antennas H p158
Olver, A.D., Parini, C.G., Brain, D., Kalatizadeh, Y., and Raghavan, K. see Parini, C.G.
Olver, A.D., and Cuthbert, L.G. FMCW radar for hidden object detection F p354
Olver, A.D., and Xiang, J. Wide angle corrugated horns analysed using spherical modal-matching H p34
Ongaro, R., Pillonnet, A., and Desgoutte, P. Ammeter induced perturbations of Argand diagrams for Debye-like dielectrics A p41
Orta, R., Tascone, R., and Zich, R. Multiple dielectric loaded perforated screens as frequency selective surfaces H p75
Osheba, S.M., Alyan, M.A.A.S., and Rahim, Y.H.A. Comparison of transient performance of superconducting and conventional generators in a multimachine system C p389
Osiński, M., Hardy, A., and Streifer, W. see Hardy, A.
Ostojic, D.R. Identification of optimum site for power system stabiliser applications C p416
Osumi, N., and Ueno, K. Detection of buried plant F p330
Oswald, G.K.A. Geophysical radar design F p371
Oteng-Adjei, J., and Billinton, R. see Billinton, R.
Otsu, Y., and Fukuchi, H. see Fukuchi, H.
Owens, D.H., Valsamis, D., and Gray, J.O. see Valsamis, D.

P

Pai, M.A., and Khorasani, K. see Khorasani, K.
Pajayakrit, A., Benaissa, M., Dlay, S.S., and Holt, A.G.J. see Benaissa, M.
Pajayakrit, A., Shakaff, A.Y.Md., and Holt, A.G.J. see Shakaff, A.Y.Md.
Palanisamy, K.R., Balachandran, K., and Ramasamy, R.S. Optimal control of linear time-varying delay systems via single-term Walsh series D p332
Palanisamy, K.R., and Balachandran, K. Analysis of time-varying singular systems via single-term Walsh-series approach D p461
Panariello, G., Franceschetti, G., and Mazzarella, G. see Franceschetti, G.
Panas, S.M., and Kriezis, E.E. Electromagnetic shielding in a system of two slabs A p451
Panayirci, E., and Tuğbay, N. Class of optimum signal shapes in data transmission F p272
Pandharipande, V.M., and Kumar, K.B. see Kumar, K.B.
Papiernik, A., Abboud, F., and Damiano, J.P. see Abboud, F.
Parini, C.G., Brain, D., Kalatizadeh, Y., Olver, A.D., and Raghavan, K. Design aspects and tolerances in array fed contour beam antennas of INTELSAT VI type H p408
Park, S.-B., and Jun, Y.-H. see Jun, Y.-H.
Parkes, D.M., and Smith, P.D. Practical method of predicting transient fields and monopole current waveforms H p231
Parng, T.-M., Sun, L.-F., and Liaw, J.-M. see Sun, L.-F.
Parsons, J.D., Adachi, F., and Feeney, M.T. see Adachi, F.
Parveen, T., Khan, I.A., and Ahmed, M.T. see Khan, I.A.
Patel, P.D. Inexpensive multi-mode satellite tracking feed antenna H p381
Pathak, S.S., and Prasad, S. see Prasad, S.
Patton, R.J., and Mudge, S.K. see Mudge, S.K.
Patzak, E., and Meissner, P. Influence on IF-filtering on bit error rate floor in coherent optical DPSK-systems J p355
Pérez, J., and Sierra, F. see Sierra, F.
Pedersen, R.J.S., Garrett, I., and Jacobsen, G. see Garrett, I.
Peelo, D.F., Avent, B.L., Drakos, J.E., Giudici, B.C., and Irvine, J.R. Shunt reactor switching tests in BC Hydro's 500 kV system C p420
Peixeiro, C. Design of log-periodic dipole antennas H p98

Penman, J., Grieve, M.D., and Ellis, G. Computation of fields due to current sources A p515
Perišić, D., Vučetić, B., and Drajić, D. see Vučetić, B.
Perrissin, G., Bernard, G., and Marzocca, J. see Bernard, G.
Pieprzyk, J., and Finkelstein, G. Towards effective nonlinear cryptosystem design E p325
Pillonnet, A., Ongaro, R., and Desgoutte, P. see Ongaro, R.
Pimenides, T.G. Exact model-matching control of linear discrete-time systems by periodic state or output feedback D p426
Ping, Li, and Sewell, J.I. Filter realisation by passive network simulation G p167
Pisler, E., Oladiran, E. O., and Israelsson, S. see Oladiran, E. O.
Pitrone, N., Brucoli, M., Scala, M. La, and Trovato, M. see Brucoli, M.
Platte, W. Effective photoconductivity and plasma depth in optically quasi-CW controlled microwave switching devices J p251
Po Wong, Kit, and Nin Cheung, Hon Circuit allocation in subtransmission switching substations using best-first search strategy C p489
Poddar, D.R., Bhattacharjee, A.K., Bhadra Chaudhuri, S.R., Mukherjee, A., and Chowdhury, S.K. see Bhattacharjee, A.K.
Poirier, M., Caldecott, R., Scofea, D., Svoboda, D.E., and Terzuoli, A.J. see Caldecott, R.
Pompignac, F., and Napieralski, A. see Napieralski, A.
Popović, B.D. Frequency-domain analysis of a large NEMP-simulator wire antenna H p135
Prabhakar, A., Singh, S.P., and Bhattacharyya, A.B. see Singh, S.P.
Prasad, R.N., Li, H.F., and Probst, D.K. see Li, H.F.
Prasad, S., and Pathak, S.S. Optimum data receiversfor cow SNR data signals in non-gaussian noiseand intersymbol interference: receiver structures and their performance analysis F p471
Price, W.L., and Woodhams, F.W.D. see Woodhams, F.W.D.
Probst, D.K., Li, H.F., and Prasad, R.N. see Li, H.F.
Prom, J.L., Castagne, J., Sarrabayrouse, G., and Munoz-Yague, A. Influence of the preoxidation cleaning on the electrical properties of thin SiO_2 layers I p20
Prosser, F., Wu, X., and Chen, X. CMOS ternary flip-flops and their applications E p266 E e340
Pryce, G.J., Wight, D.R., and Keir, A.M. see Wight, D.R.
Prys-Roberts, C., Millard, R.K., and Monk, C.R. see Millard, R.K.
Pulle, D.W.J. Performance of split-coil switched reluctance drive B p318

Q

Qian, Jing-ren Coupled-mode theory for helical fibres J p178
Qian, Y., Arvas, E., and Ross, M. see Arvas, E.
Qishan, G., Andresen, E., and Chun, G. Airgap permeance of vernier-type, doubly-slotted magnetic structures B p17
Quintana, V.H., and Van Cutsem, Th. see Van Cutsem, Th.
Quoirin, J.-B., and Roulston, D.J. see Roulston, D.J.

R

Rabah, K.V.O., Lazarus, M.J., and Ripley, P.M. see Lazarus, M.J.
Radhakrishna, H.S., and Anders, G.J. see Anders, G.J.
Rafian, M., Sterling, M.J.H., and Irving, M.R. Parallel processor algorithm for power system simulation C p285
Raghavan, K., Olver, A.D., and Clarricoats, P.J.B. see Olver, A.D.
Raghavan, K., Parini, C.G., Brain, D., Kalatizadeh, Y., and Olver, A.D. see Parini, C.G.
Ragheb, H.A., and Hamid, M. Scattering of a long dipole field by parallel cylindrical scatterers H p118
Rahim, Y.H.A., Osheba, S.M., and Alyan, M.A.A.S. see Osheba, S.M.
Rahman, B.M., and Davies, J. Analysis of optical waveguides and some discontinuity problems J p339
Raine, W.W., Baines, J.G., and King, R.J. Comparison of refractive index measurements of opitcal fibres by three methods J p190
Raja, N.K.L., Rajopadhye, N.R., Singh, M., and Khokle, W.S. see Rajopadhye, N.R.
Raji, T. Transfer function parameters in multipath channel modelling F p262
Rajopadhye, N.R., Singh, M., Raja, N.K.L., and Khokle, W.S. SEM-EBIC studies of electron beam irradiation memory effects in a-Si : H I p125
Ramachandra, K.V. State estimation of manoeuvring targets from noisy radar measurements F p82
Ramasamy, R.S., Palanisamy, K.R., and Balachandran, K. see Palanisamy, K.R.
Ramsden, V.S., and Hunter, G.P. see Hunter, G.P.
Randazzo, E., Alcuri, L., and Mamola, G. see Alcuri, L.
Rangasamy, M., and Shanmugasundaram, A. see Shanmugasundaram, A.
Rappaport, S.S., Wilson, N.D., and Vasudevan, M.M. see Wilson, N.D.
Rashid, M.H., Enjeti, P., Lindsay, J.F., and Ziogas, P.D. see Enjeti, P.
Rashwan, M.A., and Fahmy, M.M. New technique for speaker-independent isolated-word recognition F p251
Rawson, H. Glass and its history of service (Commissioned IEE review) A p325
Ray, S. Digital simulation of *B/H* excursions for power system studies C p202
Razaz, M., Khalid, K.B., Maclean, T.S.M., and Webb, P.W. see Khalid, K.B.
Razek, A., Ren, Z., Bouillault, F., and Verite, J.C. see Ren, Z.
Rebollar, J.M., and Encinar, J.A. Field theory analysis of multiport-multidiscontinuity structures: application to short-circuited *E*-plane septum H p1
Reed, I.S., Truong, T.K., Eastman, W.L., and Hsu, I.S. see Truong, T.K.
Reilly, J., Litva, J., and Bauman, P. New angle-of-arrival estimator: comparative evaluation applied to the low-angle tracking radar problem F p408 F e576
Ren, Z., Bouillault, F., Razek, A., and Verite, J.C. Comparison of different boundary integral formulations when coupled with finite elements in three dimensions A p501
Renshaw, D., Chen, W., Mavor, J., and Denyer, P.B. see Chen, W.
Rey, C., and Moreno, E. see Moreno, E.
Ribbens-Pavella, M., Xue, Y., and Van Cutsem, Th. see Xue, Y.
Riblet, G.P. Matched waveguide five-port with partial symmetry for use in six-port measurement systems H p13
Richards, J., Trier, P.E., Gummett, P., and Wallard, A. see Trier, P.E.
Rikabi, J., Bryant, C.F., and Freeman, E.M. Complementary solutions of linear and nonlinear magnetostatic problems A p433
Rikabi, J., Bryant, C.F., and Freeman, E.M. Error-based derivation of complementary formulations for the eddy-current problem A p208
Ripley, P.M., Lazarus, M.J., and Rabah, K.V.O. see Lazarus, M.J.
Roberts, J.B.G., Merrifield, B.C., Simpson, P., and Ward, J.S. Highly parallel processors in military systems E p202
Roberts, P.D., Lin, J., and Chen, S. see Lin, J.
Robinson, P.E., Malt, A.P.J., and Clarke, G.D. see Malt, A.P.J.
Robson, P.N., Kendall, P.C., and Stern, M.S. see Kendall, P.C.
Rodger, D., and Atkinson, N. Finite element method for 3D eddy current flow in thin conducting sheets A p369
Rodger, D., and Leonard, P.J. see Leonard, P.J.
Romagnoli, J.A., Karim, M.N., Agamennoni, O.E., and Desages, A. Controller designs for model-plant parameter mismatch D p157
Ross, M., Arvas, E., and Qian, Y. see Arvas, E.
Roulston, D.J., and Quoirin, J.-B. Simulation of high voltage power switching transistors under forced gain and inductive load turn-off conditions I p7
Rowlands, A.R., Davies, A.J., Turri, R., and Waters, R.T. see Davies, A.J.
Rowlands, S.L., and Evans, W.A. see Evans, W.A.
Rozzi, T., Yeung, C., and Cerri, G. see Yeung, C.
Rubinacci, G., and Albanese, R. see Albanese, R.
Ruiz-Moreno, S., Junyent, G., Soneira, M.J., and Usandizaga, J.R. Statistical analysis of nonlinear optical amplifier in high saturation J p34
Russell, P.C., and Jones, B.K. see Jones, B.K.

S

Sadra, K., Maziar, C.M., and Streetman, B.G. Choice of the scattering carrier in Monte Carlo treatments of carrier-carrier scattering I p119
Saguet, P., Wu, K., and Dzougaiev, V. see Wu, K.
Saito, S., and Ohki, M. see Ohki, M.
Sakr, M.M.F., and Soliman, H.M. see Soliman, H.M.
Salem, M.M., Lo, K.L., McColl, R.D., and Moffatt, A.M. see Lo, K.L.
Salerno, E.A., and Bramanti, M. see Bramanti, M.
Salgado, M., Middleton, R., and Goodwin, G.C. Connection between continuous and discrete Riccati equations with applications to Kalman filtering D p28
Sallam, A.A. Power system steady state stability assessment using catastrophe theory C p189
Salvatore, Luigi, and Trotta, Amerigo Flat-top windows for PWM waveform processing via DFT B p346
Sanchez, J.J., Hsueh, K., and DeMassa, T.A. Hot electron device monitoring and characterisation: a review I p113
Sangster, A.J., and McCormick, A.H.I. Resonance characteristics of waveguide slot radiators with moderate width-to-length ratios H p319
Sangwine, S.J. Fault diagnosis in combinational digital circuits using a backtrack algorithm to generate fault location hypotheses G p247
Santana, M.J., Santana, R.H.C., and Zaluska, E.J. Fast bridge for efficient LAN–LAN coupling E p270
Santana, R.H.C., Santana, M.J., and Zaluska, E.J. see Santana, M.J.
Sapeluk, A.T., and Todd, S.A. see Todd, S.A.
Sarma, J., and Flint, I. Electrically variable couplers for integrated optical circuits J p268
Sarrabayrouse, G., Prom, J.L., Castagne, J., and Munoz-Yague, A. see Prom, J.L.
Satchell, D.W., and Greenwood, J.C. see Greenwood, J.C.
Scala, M. La, Brucoli, M., Pitrone, N., and Trovato, M. see Brucoli, M.
Scattolini, R. Self-tuning control of systems with infrequent and delayed output sampling D p213
Scofea, D., Caldecott, R., Poirier, M., Svoboda, D.E., and Terzuoli, A.J. see Caldecott, R.
Scorza, E.V., Leu, M.C., and Bartel, D.L. see Leu, M.C.
Scott, H.F., Daniels, D.J., and Gunton, D.J. see Daniels, D.J.
Scrivanti, M., Bava, G.P., Debernardi, P.L., and Montrosset, I. see Bava, G.P.
Sen, M.N., Shukla, S.R., and Swarup, Prem see Shukla, S.R.
Sengupta, A., and Bandyopadhyay, S. see Bandyopadhyay, S.
Seshadri, S.R. Cylindrical waveguide mode convertor for azimuthally symmetric transverse electric modes H p420
Sewell, J.I., and Ping, Li see Ping, Li
Sewell, J.I., and Wolovitz, L.B. see Wolovitz, L.B.
Shaari, S.B.H., McCowen, A., and Board, K. see McCowen, A.
Shah, S.L., Cluett, W.R., and Fisher, D.G. see Cluett, W.R.
Shahar, A., and Zussman, A. Optical properties of metal-clad/$Pb_{1-x}Sn_xTe$ waveguides J p349
Shakaff, A.Y.Md., Boussakta, S., Marir, F., and Holt, A.G.J. see Boussakta, S.
Shakaff, A.Y.Md., Pajayakrit, A., and Holt, A.G.J. Practical implementations of block-mode image filters using the Fermat number transform on a microprocessor-based system G p141
Shanjia, X. Dielectric-waveguide branching directional coupler H p282
Shanmugasundaram, A., and Rangasamy, M. Control of compensation in linear induction motors B p22
Shark, L.-K., Terrell, T.J., and Simpson, R.J. Adaptive frame synchroniser for digital satellite communication systems F p51
Shaw, S., and Totton, K. see Totton, K.
Shaw, S.J., Burgess, N., Damper, R.I., and Totton, K.A. see Burgess, N.
Shephard, H.E., Hodson, P.D., Wallis, R.H., and Davies, J.I. see Hodson, P.D.
Shieh, L.S., Dib, H.M., and Yates, R.E. Sequential design of linear quadratic state regulators via the optimal root-locus techniques D p289
Shieh, L.S., and Yates, R.E. Separation of matrix eigenvalues and structural decomposition of large-scale systems D e181
Shtrikman, S., Ashkenazy, J., and Treves, D. see Ashkenazy, J.
Shtrikman, S., Levine, E., and Treves, D. see Levine, E.
Shukla, S.R., Swarup, Prem, and Sen, M.N. Computation of large signal GaAs Impatt diode parameters from closed form analytical solution I p13
Shuttleworth, R., Auckland, D.W., and Wong, T.W. see Auckland, D.W.
Siebert, H., and Engelhardt, W. Performance data and limiting conditions of object tracking algorithms in the presence of camera noise F p111
Sierra, F., and Pérez, J. Analysis of harmonic injection frequency dividers with three-terminals devices H p70
Simpson, P., Roberts, J.B.G., Merrifield, B.C., and Ward, J.S. see Roberts, J.B.G.
Simpson, R.J., Shark, L.-K., and Terrell, T.J. see Shark, L.-K.
Singh, M., Rajopadhye, N.R., Raja, N.K.L., and Khokle, W.S. see Rajopadhye, N.R.
Singh, N.P., Singh, Y.P., and Ahson, S.I. New design of composite controllers for synchronous machines via separation of timescales D p182
Singh, S.P., Prabhakar, A., and Bhattacharyya, A.B. Design methodologies for *C–2C* ladder-based D/A convertors for PCM codecs G p133
Singh, V. New floating point impedance simulation using operational amplifiers G p116
Singh, Y.P., Singh, N.P., and Ahson, S.I. see Singh, N.P.
Sinha, A.K., Mathur, S.P., and Sinha, A.K. see Mathur, S.P.
Sinha, N.K., and Liu, L. see Liu, L.
Sivakumar, S., Murty, Y.V.V.S., and Smolinski, W.J. see Murty, Y.V.V.S.
Skovgaard, O., Jensen, N.H., and Christiansen, P.L. see Jensen, N.H.
Slonim, M.A., and Van Wyk, J.D. Power components in a system with sinusoidal and non-sinusoidal voltages and/or currents B p76
Smith, D.W., Hodgkinson, T.G., Harmon, R.A., and Chidgey, P.J. see Hodgkinson, T.G.

Smith, I., Lazarus, M.J., Jones, L.L., and Finney, A.D. see Lazarus, M.J.
Smith, I.R., Gregory, K., and Kettleborough, J.G. see Gregory, K.
Smith, J.R., and Tait, A.J. Electrical drive simulator for teaching purposes A p29
Smith, P.D., and Parkes, D.M. see Parkes, D.M.
Smolinski, W.J., Murty, Y.V.V.S., and Sivakumar, S. see Murty, Y.V.V.S.
Smy, P.R., and Au, S. see Au, S.
Soares, R., Gouzien, P., and Legaud, P. Matching network characterisation by *S*-parameter measurements of two-port active devices H p426
Soliman, H.M., and Sakr, M.M.F. Wide-range power system pole placer C p195
Soneira, M.J., Ruiz-Moreno, S., Junyent, G., and Usandizaga, J.R. see Ruiz-Moreno, S.
Sowerby, K.W., and Williamson, A.G. Outage probability calculations for multiple cochannel interferers in cellular mobile radio systems F p208
Stanier, J., Elsherbeni, A.Z., and Hamid, M. see Elsherbeni, A.Z.
Stanković, LJ., and Jovićević, S. Modified least squares method with application to diffraction and eigenvalue problems H p339
Stegmüller, B., Wolf, Th., Kappeler, F., and Amann, M.-C. see Wolf, Th.
Stephan, R.M., Hahn, V., and Unbehauen, H. Cascade adaptive speed control of a thyristor-driven DC motor D p49
Steppe, H., Morris, D., Hein, H., and Baars, J.W.M. see Morris, D.
Sterling, M.J.H., Rafian, M., and Irving, M.R. see Rafian, M.
Stern, G.J., and Elliott, R.S. see Elliott, R.S.
Stern, M.S. Semivectorial polarised H field solutions for dielectric waveguides with arbitrary index profiles J p333
Stern, M.S. Semivectorial polarised finite difference method for optical waveguides with arbtitrary index profiles J p56
Stern, M.S., Benson, T.M., and Kendall, P.C. see Benson, T.M.
Stern, M.S., Kendall, P.C., and Robson, P.N. see Kendall, P.C.
Stewart, R.D., and Tusubira, F.F. Feedforward linearization of 950 MHz amplifiers H p347
Steyn, C.G. Optimum size of dissipative nonlinear turnoff snubber B p165
Stoica, Petre, and Nehorai, Arye Study of the statistical performance of the Pisarenko harmonic decomposition method F p161
Stoll, R.L., and Hennache, A. Method of detecting and modelling presence of shorted turns in DC field winding of cylindrical rotor synchronous machines using two airgap search coils B p281
Strauss, K. Engineering ideology A p261
Streetman, B.G., Sadra, K., and Maziar, C.M. see Sadra, K.
Streifer, W., Hardy, A., and Osiński, M. see Hardy, A.
Subbiah, M., Ammasai Gounden, N., and Krishnamurthy, M.R. see Ammasai Gounden, N.
Such, R., Cooper, A., and Kahari, W. see Cooper, A.
Sun, L.-F., Liaw, J.-M., and Parng, T.-M. Automated cynthesis of microprogrammed controllers in digital systems E p231
Surakampontorn, W., and Thitimajshima, P. Integrable electronically tunable current conveyors G p71
Sutherland, A.M., Jack, M.A., and Laver, J. Improved pitch detection algorithm employing temporal structure investigation of the speech waveform F p169
Sutherland, D., Helszajn, J., and McDonald, G. see Helszajn, J.
Svendsen, D.A. Resolution model for measurement of optical fibre preforms by focused laser transverse illumination technique J p196
Svoboda, D.E., Caldecott, R., Poirier, M., Scofea, D., and Terzuoli, A.J. see Caldecott, R.
Swarup, Prem, Shukla, S.R., and Sen, M.N. see Shukla, S.R.
Swift, G.W., and Mohamed, E.A. see Mohamed, E.A.
Sykulski, J.K. Computer package for calculating electric and magnetic fields exploiting dual energy bounds A p145
Syrmos, V.L., and Mertzios, B.G. see Mertzios, B.G.
Szabó, K.S.B., Leask, J.M., and Elmasry, M.I. Symple: a symbolic layout tool for bipolar and MOS VLSI I p29

T

Taher Abuelma'atti, Muhammad Spectral response of nonlinear magnetic conductors B p102
Taher Abuelma'atti, Muhammad Theory of avalanche diode harmonic optoelectronic mixer J p183
Tait, A.J., and Smith, J.R. see Smith, J.R.
Takehira, N., and Tanaka, A. Analysis of a perpendicular-type eddy-current speed meter A p89
Tambosso, T., Donati, S., and Annovazzi-Lodi, V. see Donati, S.
Tan, B.S., and Turner, L.F. Sequential block interleave coding of two-tone facsimile data E p95
Tan, K.-P., and Tan, T.-S. Discretionary channel routing using score function I p49
Tan, T.-S., and Tan, K.-P. see Tan, K.-P.
Tanaka, A., and Takehira, N. see Takehira, N.
Tascone, R., Orta, R., and Zich, R. see Orta, R.
Tavner, P.J., and Jackson, R.J. Coupling of discharge currents between conductors of electrical machines owing to laminated steel core B p295
Terrell, T.J., Shark, L.-K., and Simpson, R.J. see Shark, L.-K.
Terzuoli, A.J., Caldecott, R., Poirier, M., Scofea, D., and Svoboda, D.E. see Caldecott, R.
Thiagarajan, V., Zhang, Jie, Grant, T., and Barton, T.H. see Zhang, Jie
Thitimajshima, P., and Surakampontorn, W. see Surakampontorn, W.
Thomas, D.W.P., Christopoulos, C., and Wright, A. see Christopoulos, C.
Thomas, P.R., and Brown, A.D. see Brown, A.D.
Thompson, D.S., and Wilson, M.R. Thermal analysis of a multicore cable C p79
Todd, S.A., and Sapeluk, A.T. Simple real-time signal processing laboratory experiment A p107
Totton, K., and Shaw, S. Self-test: the solution to the VLSI test problem? E p190
Totton, K.A., Burgess, N., Damper, R.I., and Shaw, S.J. see Burgess, N.
Toyer, J., Begg, M.C., and Armstrong, A.G. see Begg, M.C.
Trantor, K.M. Installation of power system stabilisers and the evaluation of settings C p244
Treves, D., Ashkenazy, J., and Shtrikman, S. see Ashkenazy, J.
Treves, D., Levine, E., and Shtrikman, S. see Levine, E.
Trier, P.E., Gummett, P., Richards, J., and Wallard, A. The effect of the defence sector on the UK electronics industry A p419
Trotta, Amerigo, and Salvatore, Luigi see Salvatore, Luigi
Trovato, M., Brucoli, M., Scala, M. La, and Pitrone, N. see Brucoli, M.
Truong, T.K., Eastman, W.L., Reed, I.S., and Hsu, I.S. Simplified procedure for correcting both errors and erasures of Reed–Solomon code using Euclidean algorithm E p318
Tsai, M.-K., Wang, J.-S., and Wu, C.-Y. see Wang, J.-S.
Tsang, T.T.C., and Clarke, D.W. Generalised predictive control with input constraints D p451
Tsao, Ta-Peng, Chen, Shi-Lin, Huang, Ching-Lien, and Lin, Wei-Cheng Dynamic response analysis of marine power systems C p74
Tse, C.T., and Tso, S.K. Approach to the study of small-perturbation stability of multimachine systems C p396
Tse, C.T., and Tso, S.K. Design optimisation of power system stabilisers based on modal and eigenvalue-sensitivity analyses C p406
Tso, S.K., and Ho, P.T. see Ho, P.T.
Tso, S.K., and Tse, C.T. see Tse, C.T.
Tudor, M.J., Andres, M.V., Foulds, K.W.H., and Naden, J.M. Silicon resonator sensors: interrogation techniques and characteristics D p364
Tuğbay, N., and Panayirci, E. see Panayirci, E.
Turner, J.D. Development of a rotating-shaft torque sensor for automotive applications D p334
Turner, L.F., Belezinis, P., and Habbab, I.M.I. see Belezinis, P.
Turner, L.F., and Belezinis, P. see Belezinis, P.
Turner, L.F., and Kabilafkas, D. see Kabilafkas, D.
Turner, L.F., and Tan, B.S. see Tan, B.S.
Turri, R., Davies, A.J., Dutton, J., and Waters, R.T. see Davies, A.J.
Turri, R., Davies, A.J., Rowlands, A.R., and Waters, R.T. see Davies, A.J.
Tusubira, F.F., and Stewart, R.D. see Stewart, R.D.
Twisleton, J.R.G. Resonance frequencies and behaviour of the impatt cap oscillator H p196
Twynam, J.K., and Woods, R.C. Current crowding effects in GaAs/AlGaAs heterojunction phototransistors J p52 J p210

U

Uchikado, S., Hori, N., Nikiforuk, P.N., and Kanai, K. see Hori, N.
Üçtuğ, Y., and Demirekler, M. Modelling, analysis and control of a wind-turbine driven self-excited induction generator C p268
Ueno, K., and Osumi, N. see Osumi, N.
Umeda, H., and Nakajima, M. Analysis of an FET amplifier using power-dependent *S*-parameters G p162
Un, C.K., and Cho, W.D. see Cho, W.D.
Unbehauen, H., Stephan, R.M., and Hahn, V. see Stephan, R.M.
Unbehauen, R., and Cichocki, A. see Cichocki, A.
Urquhart, P. Review of rare earth doped fibre lasers and amplifiers J p385
Urquhart, P., Millar, C.A., Miller, I.D., Mortimore, D.B., and Ainslie, B.J. see Millar, C.A.
Usami, Masashi, Akiba, Shigeyuki, Utaka, Katsuyuki, and Matsushima, Yuichi InGaAs-cap-Monitor integrated 1.55 μm $\lambda/4$-shifted DFB lasers with higher output design J p289
Usandizaga, J.R., Ruiz-Moreno, S., Junyent, G., and Soneira, M.J. see Ruiz-Moreno, S.
Utaka, Katsuyuki, Usami, Masashi, Akiba, Shigeyuki, and Matsushima, Yuichi see Usami, Masashi
Uzunoglu, N.K., and Capsalis, C.N. see Capsalis, C.N.

V

Vachtsevanos, G., Mertzios, B.G., and Lewis, F.L. see Mertzios, B.G.
Valenzano, A., and Ciminiera, L. see Ciminiera, L.
Valsamis, D., Owens, D.H., and Gray, J.O. Stability and performance bounds for the linearisation-based analysis and design of multivariable nonlinear systems D p79
Van Bladel, J. Foucault currents in a conducting sphere moving with constant velocity A p463
Van Bladel, J.G. Motion of a conducting loop in a magnetic field A p217
Van Cutsem, Th., Xue, Y., and Ribbens-Pavella, M. see Xue, Y.
Van Cutsem, Th., and Quintana, V.H. Network parameter estimation using online data with application to transformer tap position estimation C p31
van den Berghe, L.G. CMOS integrated circuit for differential monitoring of spacecraft battery cell voltages I p151
van der Wegen, L.L.M., and Hautus, M.L.J. see Hautus, M.L.J.
van Oudheusden, B.W. Silicon flow sensors D p373
Van Wyk, J.D., and Slonim, M.A. see Slonim, M.A.
Vasudevan, M.M., Wilson, N.D., and Rappaport, S.S. see Wilson, N.D.
Veenstra, P.K., Beenker, F.P.M., and Koomen, J.J.M. Testing of random access memories: theory and practice G p24
Verite, J.C., Ren, Z., Bouillault, F., and Razek, A. see Ren, Z.
Verriele, H., Lorriaux, J.L., Legry, P., Gouy, J.P., Vilcot, J.P., and Decoster, D. GaAs monolithic integrated photoreceiver for 0.8 μm wavelength: association of Schottky photodiode and FET J p92
Vidallon, C.M., and Moukarzel, I.K. see Moukarzel, I.K.
Vigneron, S., and Guillon, P. Input impedance and loaded quality factor of a probe exciting dielectric resonator H p163
Vilcot, J.P., Verriele, H., Lorriaux, J.L., Legry, P., Gouy, J.P., and Decoster, D. see Verriele, H.
Vu, T.B., and Lo, K.W. see Lo, K.W.
Vučetić, B., Drajić, D., and Perišić, D. Algorithm for adaptive error control system synthesis F p85

W

Walker, E.P., and Johns, A.T. see Johns, A.T.
Walker, R.S., Wong, K.M., and Niezgoda, G. see Wong, K.M.
Wallace, Dr. A.M. Industrial applications of computer vision since 1982 E p117
Wallard, A., Trier, P.E., Gummett, P., and Richards, J. see Trier, P.E.
Wallis, R.H., Hodson, P.D., Davies, J.I., and Shephard, H.E. see Hodson, P.D.
Walters, I.R., and Davidson, A.M. see Davidson, A.M.
Walton, S.J., and Boys, J.T. see Boys, J.T.
Wang, J.-S., Wu, C.-Y., and Tsai, M.-K. Low power dynamic ternary logic G p221
Wang, L., and Goldberg, M. Lossless progressive image transmission by residual error vector quantiation F p421 F e576
Wang, L., and Goldberg, M. Lossless progressive image transmission by residual error vector quantisation F e576
Wang, W.J., and Chen, B.S. see Chen, B.S.
Ward, J.S., Roberts, J.B.G., Merrifield, B.C., and Simpson, P. see Roberts, J.B.G.
Warwick, K., and Clarke, D.W. Weighted input predictive controller D p16
Watanabe, M., Mukai, S., Itoh, H., and Yajima, H. Optical tristability and associated ternary digital functions using a twin-stripe laser diode J p74
Waters, C.D., Farrell, M., Grainger, R.P., Leahy, P.J., and Mellitt, B. Dublin area rapid transit B p134
Waters, R.T., Davies, A.J., Dutton, J., and Turri, R. see Davies, A.J.
Waters, R.T., Davies, A.J., Rowlands, A.R., and Turri, R. see Davies, A.J.
Webb, P.W., Khalid, K.B., Maclean, T.S.M., and Razaz, M. see Khalid, K.B.
Weber, P., and Haykin, S. Space-based radar: narrowing the main-beam clutter spectrum through the use of a high-aspect-ratio antenna F p73
Wei, W., and Hanyang, W. see Hanyang, W.
Weiner, D., Navon, U., and Zur, I. see Navon, U.
Weissmann, G. Entropy: Murphy was right A p123
Weitzel, P.M., and Burton, N.J. see Burton, N.J.
Wende, D., and Davies, W.S. see Davies, W.S.
Westbrook, L.D., and Adams, M.J. Explicit approximations for the linewidth-enhancement factor in quantum-well lasers J p223
Westbrook, M.H. Automotive transducers: an overview D p339
Westcott, J.H., Finkelstein, L., Land, F., and Carson, E.R. see Finkelstein, L.

Wey, C.-L., Chan, S.-W., and Leung, S.S. see Chan, S.-W.
White, I.H., Linton, R.S., and Carroll, Professor J.E. Directional coupling snd bistability in four contact twin-stripe injection lasers J p25
White, N.M., Brignell, Prof. J.E., and Cranny, A.W.J. see Brignell, Prof. J.E.
Whittington, H.W. Third World electrification A p277
Wight, D.R., Keir, A.M., and Pryce, G.J. Limits of electro-absorption in high purity GaAs, and the optimisation of waveguide devices J p39
Wilcox, D.J., Conlon, M., and Hurley, W.G. Calculation of self and mutual impedances for coils on ferromagnetic cores A p470
Williams, T.D.N. Implications of military engineering A p303
Williamson, A.G., and Sowerby, K.W. see Sowerby, K.W.
Williamson, S., and Ellis, M.R.E. Influence of rotor currents on end-winding forces in cage motor B p371
Wilson, M.R., and Thompson, D.S. see Thompson, D.S.
Wilson, N.D., Rappaport, S.S., and Vasudevan, M.M. Rapid acquisition scheme for spread-spectrum radio in a fading environment F p95
Wilson, S.G., and Lakshman, M. Autocorrelation and power spectrum of Hadamard signalling F p258
Wing, S.K., and Nicholson, H. Frequency-response method for linear multivariable systems simplification D p381
Wolf, Th., Kappeler, F., Stegmüller, B., and Amann, M.-C. GaInAsP twin-stripe lasers with asymmetrical waveguide channels J p5
Wollnik, Hermann Optics of charged particles J p358
Wolovitz, L.B., and Sewell, J.I. General analysis of large linear switched capacitor networks G p119
Wolstenholme, P. Filtering of network addresses in real time by sequential decoding E p55
Wong, K.M., Walker, R.S., and Niezgoda, G. Effects of random sensor motion on bearing estimation by the MUSIC algorithm F p233
Wong, T.W., Auckland, D.W., and Shuttleworth, R. see Auckland, D.W.
Woo Lee, Chang, and Bai Park, Song Determination of thyristor reverse recovery cirrent parameters B p91
Woodhams, F.W.D., and Price, W.L. Optimising accelerator for CAD workstation E p214
Woods, R.C., and Marsland, J.S. see Marsland, J.S.
Woods, R.C., and Twynam, J.K. see Twynam, J.K.
Woodward, J.L., and Bhattacharya, J.L. see Bhattacharya, J.L.
Wray, E.M., and Allen, J.F. see Allen, J.F.
Wright, A., Christopoulos, C., and Thomas, D.W.P. see Christopoulos, C.
Wu, C.-Y., Jang, W.-Y., and Wu, H.-J. General experimental method of parameter extraction for CMOS timing macromodels I p39
Wu, C.-Y., Li, C., and Hwang, J.S. Timing macromodels for CMOS static set/reset latches and their applications E p151
Wu, C.-Y., Wang, J.-S., and Tsai, M.-K. see Wang, J.-S.
Wu, H.-J., Wu, C.-Y., and Jang, W.-Y. see Wu, C.-Y.
Wu, J.S., Chen, C.S., and Chang, Y.N. see Chen, C.S.
Wu, K., Dzougaiev, V., and Saguet, P. Complete theoretical and experimental analysis on properties of planar periodic waveguides H p27
Wu, Q.H., and Hogg, B.W. Adaptive controller for a turbogenerator system D p35
Wu, Q.H., and Hogg, B.W. Robust self-tuning regulator for a synchronous generator D p463
Wu, W.-T., Chu, Y.T., and Chen, K.-C. Weighted moving identification and control for multivariable systems D p196
Wu, X., Prosser, F., and Chen, X. see Prosser, F.
Wuerfl, J., Gupta, R.P., Hartnagel, H.L., and Khokle, W.S. see Gupta, R.P.
Wunsch, A.D. Fourier series treatment of the sleeve monopole antenna H p217

X

Xiang, J., and Olver, A.D. see Olver, A.D.
Xu, Ding-Yi, and Nguyen, D.T. see Nguyen, D.T.
Xue, Y., Van Cutsem, Th., and Ribbens-Pavella, M. Real-time analytic sensitivity method for transient security assessment and preventive control C p107

Y

Yajima, H., Watanabe, M., Mukai, S., and Itoh, H. see Watanabe, M.
Yamada, N., Miyazawa, S., and Nakamura, F. see Miyazawa, S.
Yang, J.J., Fang, D.G., and Delisle, G.Y. see Fang, D.G.
Yates, R.E., Shieh, L.S., and Dib, H.M. see Shieh, L.S.
Yates, R.E., and Shieh, L.S. see Shieh, L.S.
Yeo, S.P., and Ang, A.L. Alternative approach to the calibration of six-port reflectometers using four standards H p353
Yeo, S.P., and Cullen, A.L. see Cullen, A.L.
Yeung, C., Rozzi, T., and Cerri, G. Cross-polarisation coupling in curved dielectric rib waveguides J p281
Young, T.P. Design of integrated optical circuits using finite elements A p135
Yun, J.S., and Cho, H.S. Adaptive model following control of electrohydraulic velocity control systems subjected to unknown disturbances D p149

Z

Zaluska, E.J., Santana, M.J., and Santana, R.H.C. see Santana, M.J.
Zhang, Jie, Thiagarajan, V., Grant, T., and Barton, T.H. New approach to field orientation control of a CSI induction motor drive B p1
Zhang, W., and Elliott, D. Stochastic time-optimal control problems D p395
Zhang, W.-X., and Bo, Y.-M. Pattern synthesis for linear equal-spaced antenna array using an iterative eigenmodes method H p167
Zhou, H., Bergmann, J., Brown, R.C., and Clarricats, P.J.B. see Bergmann, J.
Zhu, Z.C., and Clark, A.P. Near-maximum-likelihood decoding of convolutional codes F p33
Zich, R., Orta, R., and Tascone, R. see Orta, R.
Zier, D., and Liebsch, W. see Liebsch, W.
Ziogas, P.D., Enjeti, P., Lindsay, J.F., and Rashid, M.H. see Enjeti, P.
Zolghadr, F., Darnell, M., and Honary, B.K. see Darnell, M.
Zur, I., Navon, U., and Weiner, D. see Navon, U.
Zussman, A., and Shahar, A. see Shahar, A.

Addresses

Ash, E.A. Inaugural Address: Higher education, industry and Government — new rules for a *ménage à trois* A p1
Edwards, D.R. Address as Chairman of the IEE Scier e, Education & Technology Division: Supertension or superconducting cables: 20 years on — can the UK regain the lead? C p9
Forrest, John R. Address as Chairman of the IEE Electronics Division: Town crier to world seer: a broadcast odyssey F p1
Jefferies, D.G. Address as Chairman of the IEE Management & Design Division: Managing a business in the public sector A p13
Odell, K.M. Address as Chairman of the IEE Power Division: Power projects: the role of the contractor C p1

IEE commissioned reviews

Harrold, M.V., and Lush, D.M. Automatic controls in building services B p105
McLean, K.J. Electrostatic precipitators A p347
Rawson, H. Glass and its history of service A p325

Acoustics (*see* Acoustoelectric effects and Sound broadcasting and audio)
Acoustoelectric effects
Active networks
Actuators (*see* Transducers)
Adaptive control
Algebra (incl. Matrix algebra) (*see* Mathematical techniques)
Algorithms (*see* Mathematical techniques)
Amplifiers
Analogue computers and computation
Analogue-digital conversion
Antennas
Antennas (active)
Antennas (adaptive)
Antennas (aperture)
Antennas (arrays)
Antennas (dipole)
Antennas (frequency inpendent)
Antennas (horns and feeds)
Antennas (measurements)
Antennas (microstrip)
Antennas (millimetre wave)
Antennas (reflectors)
Antennas (slot)
Antennas (theory)
Antennas (time domain)
Antennas (travelling wave)
Antennas (wire)
Arcing
Attenuators (*see* Instrumentation and measuring science)
Audio (*see* Sound broadcasting and audio)
Avionics
Batteries and cells
Biological effects
Biomass
Biomedical applications
Bipolar transistors
Boolean algebra (*see* Logic)
Breakdown and gas discharges
Cables and overhead lines (*see* Coaxial cables)
Calibration (*see* Instrumentation and measuring science)
Charge-coupled devices
Choppers (*see* Control equipment and applications)
Circuit breakers and circuit breaking
Circuit theory and design
Closed-loop systems
Coaxial cables (*see* Cables and overhead lines)
Coaxial components
Codes and decoding
Commutation
Components
Computer applications
Computer graphics
Computer simulation
Computer-aided design
Conductors and conductivity
Control equipment and applications
Control systems
Control theory
Convertors
Crosstalk
Cybernetics and robotics
Decoding (*see* Codes and decoding)
Delay lines
Demodulation (*see* Modulation)
Design
Detection
Dielectric materials
Digital arithmetic (*see* Digital computers and computation)
Digital circuits
Digital communication systems
Digital computers and computation
Digital control (*see* Digital computers and computation)
Digital instrumentation (*see* Instrumentation and measuring science)
Digital-analogue conversion
Diodes
Discharges, electric (*see* Arcing)
Discharges, gas (*see* Breakdown and gas discharges)
Distribution networks (*see* Power transmission)
Doping
Earthing (*see* System protection)
Eddy currents
Education and training
Educational projects
Electric shock (*see* Hazards)
Electrical machines
Electromagnetic compatibility
Electromagnetic theory
Electron devices
Electronic circuits (*see* Circuit theory and design)
Energy conversion and storage
Engineering and society
Engineering administration and management
Epitaxy
Errors and error analysis
Fault detection
Fault location
Feedback
Ferrites and ferromagnetics
Ferromagnetics (see Ferrites and ferromagnetics)
Fibres, optical (*see* Optics)
Field-effect transistors
Filters and filtering
Financial management
Fuel cells (*see* Batteries and cells)
Generators
Graph theory and topology
Gunn devices
Hazards
History (*see* Reviews of progress)
Holography (*see* Optics)
Hydroelectric power generation
Hysteresis
Image processing
Induction motors
Industrial applications of power (*see* Power utilisation and industrial applications)
Information and communication theory
Instrumentation and measuring science
Insulators and insulation
Integrated circuits (*see* Circuit theory and design)
Integrated optics (*see* Optics)
Interface states
Interference (*see* Noise and interference)
Inverters (*see* Power electronics)
Ionisation (*see* Breakdown and gas discharges)
Ionospheric propagation (*see* Radio-wave propagation)
Lasers
Lighting
Lightning and lightning protection
Linear motors
Linear networks (*see* Networks)
Load and voltage regulation
Logic
Long-term planning
Magnetic devices and properties
Magnetic fields
Management
Manufacturing
Mathematical techniques
Matrix algebra (*see* Mathematical techniques)
Measurement and measuring (*see* Instrumentation and measuring science)
Metal-insulator-semiconductor structures
Metal-oxide-semiconductor structures
Microprocessors
Microscopes
Microstrip and stripline
Microwave active components
Microwave circuits and networks
Microwave communications
Microwave heating
Microwave integrated circuits
Microwave measurements
Microwave passive components
Microwave systems
Microwave tubes
Millimetre wave devices and components
Modelling (*see* Simulation)
Modulation
Monitoring
Motors (*see* Induction motors, Linear motors, Reluctance motors, Stepping motors, Synchronous motors)
Motors, induction (*see* Induction motors)
Motors, linear (*see* Linear motors)
Motors, reluctance (*see* Reluctance motors)
Motors, stepping (*see* Stepping motors)
Motors, synchronous (*see* Synchronous motors)
Multivariable control systems (*see* Control equipment and applications)
Natural resources
Networks (*see Telephone exchanges and networks*)
Noise and interference
Nondestructive testing
Nonlinear optics
Nonlinear systems
Numerical analysis
Optical amplifiers
Optical cables
Optical fibres (*see* Optics)
Optical materials
Optical processing (*see* Signal processing and optics)
Optical sensors
Optical switching
Optical systems (*see* Optics)
Optical transmission (*see* Optics)
Optical waveguides
Optics
Optimal control
Optimisation
Optoelectronics
Oscillators (*see* Semiconductor devices and materials)
Overhead lines (*see* Cables and overhead lines)
Overvoltages (see System protection)
Pattern recognition (*see Picture processing and* pattern recognition)
Permittivity
Perturbation theory
Phasing and phase control
Photodetectors
Physical properties
Picture processing and pattern recognition
Plant condition monitoring
Plasmas
Poles and zeros
Polynomials (*see* Mathematical techniques)
Power conversion (*See* Transformers)
Power electronics
Power system protection (*see* System protection)
Power systems and plant
Power transmission and distribution (*see* Transmission and distribution plant)
Power utilisation and industrial applications
Process control (*see* Control theory)
Product design
Production engineering (*see* Project and production engineering)
Project and production engineering (*See* Engineering administration and management)
Propogation in random media
Pulse-code modulation
Quantum electronics
Radar and radionavigation
Radiation
Radio astronomy
Radio waves (*see* Radio-wave propagation)
Radio-wave propagation (ground wave)
Radio-wave propagation (ionospheric)
Radio-wave propagation (microwave)
Radio-wave propagation (millimetre wave)
Radio-wave propagation (terrain effects)
Radio-wave propagation (tropospheric)
Radiocommunication
Radionavigation (*see* Radar and radionavigation)
Radomes
Railway electrification and transportation
Receivers
Relays (*see* system protection)
Reliability
Reluctance motors
Remote sensing
Reviews of progress
Robotics (*see* Cybernetics and robotics)
Satellite links and space communication
Schottky-barrier devices
Semiconductor devices and materials (*see* Diodes, Thyristors and Transistors)
Semiconductor lasers
Servomotors
Signal processing
Simulation
Social responsibility
Solar cells (*see* Energy conversion and storage)
Solar power
Sonics and ultrasonics
Sound broadcasting and audio
Space communication (*see* Satellite links and space communication)
Speech synthesis
Stabilisers (*see* Stability)
Stability
Standardisation and standards
Stepping motors
Submillimetre systems
Superconductivity
Surface-acoustic-wave devices (SAW)
Switches and switching theory
Switchgear
Synchronous generators (*see* Generators)
Synchronous motors
System protection
Telecommunication (*see* Radiocommunication)
Telecommunication traffic (*see* Telecommunication)
Telemetry
Telephone exchanges and networks
Telephony
Teletext
Television
Thyristors (*see* Semiconductor devices and materials)
Tidal power
Topology (*see* Graph theory and topology)
Torque (*see Motors*)
Traction (*see* Railway electrification and transportation)
Transducers
Transformers
Transients
Transistors (*see* Semiconductor devices and materials)
Transmission and distribution plant (*see* Power transmission and distribution)
Transmission lines
Transmitters
Transportation (*see* Vehicles and transportation)
Tropospheric propagation (*see* Radiowave propagation)
Turbogenerators (*see* Generators)
Ultrasonics (*see Sonics and ultrasonics*)
Underground cables (*see* Cables and overhead lines)
Vehicles and transportation
Very large scale integration
Vibration
Vocoders (*see* Voice communication)
Voice communication
Voltage regulators (*see* Load and voltage regulation)
Waveguides and waveguide components
Wave power
Wind power (*see* Energy conversion and storage)
X-rays

ACTIVE NETWORKS

New floating point impedance simulation using operational amplifiers. V. Singh G p116

ADAPTIVE CONTROL

Adaptive control of optimal model matching in H^{∞}-norm space. C.-L. Hwang and B.-S. Chen D p295
Adaptive controller for a turbogenerator system. Q.H. Wu and B.W. Hogg D p35
Adaptive model following control of electrohydraulic velocity control systems subjected to unknown disturbances. J.S. Yun and H.S. Cho D p149
Adaptive state tracking. L. Liu and N.K. Sinha D p429
Cascade adaptive speed control of a thyristor-driven DC motor. R.M. Stephan, V. Hahn and H. Unbehauen D p49
Discrete-time adaptive control for time-varying systems subject to unknown fast time-varying deterministic disturbances. Z. Li D p445
Multipurpose adaptive control in deterministic multivariable systems. B.-S. Chen and C.-M. Lin D p282
Multivariable self-tuning control with decoupling for robotic manipulators. M.-H. Liu and W. Lin D p43
On the improvement of an adaptive observer for multi-output systems. N. Hori, P.N. Nikiforuk, K. Kanai and S. Uchikado D p67
Robust pole-placement algorithm for adaptive control. C.S. Berger D p493
Robustness analysis of discrete-time adaptive control systems using input-output stability theory: a tutoral. W.R. Cluett, S.L. Shah and D.G. Fisher D p133

ALGEBRA
(incl. Matrix algebra)

Weighted input predictive controller. K. Warwick and D.W. Clarke D p16
p-adic number theory. R.N. Gorgui-Naguib G p107

ALGORITHMS

Adaptive linear-phase complex filtering algorithms. Xian Chen F p481 F e576
Algorithm for adaptive error control system synthesis. B. Vučetić, D. Drajić and D. Perišić F p85
Algorithm for design centering based on use of sensitivity information. N.G. Maratos G p11
Algorithms for multiplication in Galois field for implementation using systolic arrays. S. Bandyopadhyay and A. Sengupta E p336
Beam propagation method and geometrical optics. J.J. Gribble and J.M. Arnold J p343
Characteristic decomposition and the multivariable generalisation of predictive self-tuning control. D.J. Cloud and B. Kouvaritakis D p165
Computer assessment of IDMT relay performance for phase and earth faults on interconnected power systems. D. Lidgate and H. Askarian Abyaneh C p157
Connection between continuous and discrete Riccati equations with applications to Kalman filtering. M. Salgado, R. Middleton and G.C. Goodwin D p28
Convergence of explicit LQG self-tuning controllers. M.J. Grimble D p309
Determination of weighting polynomials in generalised minimum variance controllers. R.S. Mendes, W.C. Amaral and L.G. Latre D p21
Diakoptic mesh analysis of limited size power supply systems. K. Gregory, J.G. Kettleborough and I.R. Smith C p124
Discrete-time adaptive control for time-varying systems subject to unknown fast time-varying deterministic disturbances. Z. Li D p445
Discretionary channel routing. H.W. Leong and C.L. Liu G p45
Dynamic response analysis of marine power systems. Ta-Peng Tsao, Shi-Lin Chen, Ching-Lien Huang and Wei-Cheng Lin C p74
Effects of random sensor motion on bearing estimation by the MUSIC algorithm. K.M. Wong, R.S. Walker and G. Niezgoda F p233
Factored state-space realisation of two-dimensional systems. K. Benmahammed D p421
Formant estimation algorithm based on pole focusing offering improved noise tolerance and feature resolution. G. Duncan and M.A. Jack F p18
Formant estimation system based on weighted least-squares lattice filters. X. Huang, G. Duncan and M. Jack F p539
General analysis of large linear switched capacitor networks. L.B. Wolovitz and J.I. Sewell G p119
Goal-oriented subgraph isomorphism technique for IC device recognition. A.D. Brown and P.R. Thomas I p141
Gradient approximation method for circuit optimisation. I.K. Moukarzel and C.M. Vidallon G p129
Heuristic algorithm for the minimisation of generalised Boolean functions. G. Caruso E p108
Image processing for electronic document storage. A. Cooper, W. Kahari and R. Such E p196
Improved pitch detection algorithm employing temporal structure investigation of the speech waveform. A.M. Sutherland, M.A. Jack and J. Laver F p169
Improvement of current loop response of thyristor DC drive by time-domain approximation. D. Drake and P. Lindon B p261
Knowledge-based project control employing heuristic optimisation. T.J. Barber and J.T. Boardman A p529
Low cost serial multipliers for high-speed specialised processors. L. Ciminiera and A. Valenzano E p259 E e340
Methods for the solution of open-boundary electromagnetic-field problems. C.R.I. Emson A p151
Microprocessor implementation of new optimal PWM switching strategies. S.R. Bowes and A. Midoun B p269
Minimax design of 2D FIR linear phase digital filters. C. Charalambous and H. Khreishi G p194
Modified pole-assignment controller for plant models with exact or near pole-zero cancellation. M.E. Halpern D p189
New angle-of-arrival estimator: comparative evaluation applied to the low-angle tracking radar problem. J. Reilly, J. Litva and P. Bauman F p408 F e576
New method for computing Dolph-Chebyshev arrays, and its comparison with other methods. F. Ares and E. Moreno H p129
New pole assignment algorithm with reduced norm feedback matrix. R.G. Cameron D p111
Optimal operational planning for a hydro-electric generation system. D. Lidgate and B.H. Amir C p169
Optimising accelerator for CAD workstation. F.W.D. Woodhams and W.L. Price E p214
Parallel architecture modified Booth multiplier. A.R. Cooper G p125
Parallel processor algorithm for power system simulation. M. Rafian, M.J.H. Sterling and M.R. Irving C p285
Parameter-bounding identification algorithms for bounded-noise records. S.H. Mo and J.P. Norton D p127
Performance data and limiting conditions of object tracking algorithms in the presence of camera noise. H. Siebert and W. Engelhardt F p111
Realistic power system security algorithm. A. Mohamed and G.B. Jasmon C p98
Robust pole-placement algorithm for adaptive control. C.S. Berger D p493
Robust self-tuning regulator for a synchronous generator. Q.H. Wu and B.W. Hogg D p463
Scale based algorithm for recognition of blurred planar objects. D.T. Nguyen and Ding-Yi Xu E p307
Segmented-image coding: performance comparison with the discrete cosine transform. M.J. Biggar, O.J. Morris and A.G. Constantinides F p121
Self-tuning control of systems with infrequent and delayed output sampling. R. Scattolini D p213
Simple *RC* model for integrated multiterminal interconnections. M.G. Harbour and J.M. Drake G p19
Simplified procedure for correcting both errors and erasures of Reed–Solomon code using Euclidean algorithm. T.K. Truong, W.L. Eastman, I.S. Reed and I.S. Hsu E p318
Simulation model for optimising energy allocation to hydro-electric and thermal plants in a mixed thermal/hydro-electric power system. U. Navon, I. Zur and D. Weiner C p182
Some aspects of two- and three-dimensional transient-eddy-current modelling using finite elements and single-step time-marching algorithms. P.J. Leonard and D. Rodger A p159
Techniques for improving stability rate of linear predictive image coding schemes. M. Andrews and D.T. Nguyen E p298
Theoretical performance prediction of the MUSIC algorithm. D.R. Farrier, D.J. Jeffries and R. Mardani F p216
Two-level state estimation for large power system Part 1: Algorithms. K.L. Lo, M.M. Salem, R.D. McColl and A.M. Moffatt C p299
Two-loop self-tuning cascade control. P.J. Gawthrop and M. Kharbouch D p232
VLSI design for diminished-1 multiplication of integers modulo a Fermat number. M. Benaissa, A. Pajayakrit, S.S. Dlay and A.G.J. Holt E p161
Weighted input predictive controller. K. Warwick and D.W. Clarke D p16
Weighted moving identification and control for multivariable systems. W.-T. Wu, Y.T. Chu and K.-C. Chen D p196
p-adic number theory. R.N. Gorgui-Naguib G p107

AMPLIFIERS

Analysis of an FET amplifier using power-dependent *S*-parameters. H. Umeda and M. Nakajima G p162
Integrable electronically tunable current conveyors. W. Surakampontorn and P. Thitimajshima G p71
Large-signal field analysis of an O-type travelling wave amplifier. Part 3: Three-dimensional electron motion. N. Kalyanasundaram and R. Chinnadurai I p59
New floating point impedance simulation using operational amplifiers. V. Singh G p116
New inline wideband dynamic semiconductor laser amplifier model. A.J. Lowery J p243
Prediction of RFI demodulation in bipolar operational amplifiers. M.T. Abuelma'atti G p29

ANALOGUE COMPUTERS AND COMPUTATION

Matrix power generation using an optical reduced-bandwidth systolic array. G.M. Megson and D.J. Evans J p435

ANTENNAS

Double-sided printed arrays with large bandwidth. E. Levine, S. Shtrikman and D. Treves H p54
Measurement of anechoic chamber reflections by time-domain techniques. E.N. Clouston, P.A. Langsford and S Evans H p93
Space-based radar: narrowing the main-beam clutter spectrum through the use of a high-aspect-ratio antenna. P. Weber and S. Haykin F p73
Synthesis of shaped-beam reflector antenna patterns. J. Bergmann, R.C. Brown, P.J.B. Clarricoats and H. Zhou H p48
Tracking systems for satellite communications. G.J. Hawkins, D.J. Edwards and J.P. McGeehan F p393

ANTENNAS (ACTIVE)

Loss calculations for rectangular coaxial lines. K.H. Lau H p207

ANTENNAS (ADAPTIVE)

Aan alternative approach for designing narrowband antenna array processors with broadband capability. M.H. Er and B.P. Ng H p111
Adaptive antenna array under directional and spatial derivative constraints. M.H. Er H p414
Improving performance of monopulse phased array in direction finding. K.W. Lo and T.B. Vu H p391
Technique for antenna array pattern synthesis with controlled broad nulls. M.H. Er H p375

ANTENNAS (APERTURE)

Radiation from a flanged parallel-plate waveguide: Solution by moment method with inclusion of edge condition. M.S. Leong, P.S. Kooi and Chandra H p249
Shaped patterns from a continuous planar aperture distribution. R.S. Elliott and G.J. Stern H p366

ANTENNAS (ARRAYS)

Algebraic formulation of Kumaresan-Tufts superresolution method, showing relation to ME and MUSIC methods. U. Nickel **F** p7
Array synthesis with excitation constraints. G. Franceschetti, G. Mazzarella and G. Panariello **H** p400
Design aspects and tolerances in array fed contour beam antennas of INTELSAT VI type. C.G. Parini, D. Brain, Y. Kalatizadeh, A.D. Olver and K. Raghavan **H** p408
General radiation-pattern synthesis technique for array antennas of arbitrary configuration and element type. R.F.E. Guy **H** p241
Improving performance of monopulse phased array in direction finding. K.W. Lo and T.B. Vu **H** p391
Pattern synthesis for linear equal-spaced antenna array using an iterative eigenmodes method. *W.-X. Zhang and Y.-M. Bo* **H** p167
Positions and magnitudes of fixed phase shifters in Butler matrices incorporating 90° hybrids. T.M. Macnamara **H** p359
Simple expressions for mutual impedances. A.E. Gera **H** p395
Superimposed dichroic microstrip antenna arrays. J.R. James and G. Andrasic **H** p304
Synthesis of sub-arrayed monopulse linear arrays through matching of independently optimum sum and difference excitations. Derek A. McNamara **H** p293
Synthesis of sum and difference patterns for two-section monopulse arrays. D.A. McNamara **H** p371
Technique for antenna array pattern synthesis with controlled broad nulls. M.H. Er **H** p375

ANTENNAS (DIPOLE)

Design of log-periodic dipole antennas. C. Peixeiro **H** p98
Double-sided printed arrays with large bandwidth. E. Levine, S. Shtrikman and D. Treves **H** p54
Fourier series treatment of the sleeve monopole antenna. A.D. Wunsch **H** p217
Scattering of a long dipole field by parallel cylindrical scatterers. H.A. Ragheb *and M. Hamid* **H** p118
Simple expressions for mutual impedances. A.E. Gera **H** p395

ANTENNAS (HORNS AND FEEDS)

Bandwidth of a square hard horn. Per-Simon Kildal **H** p275
Dielectric cone loaded horn antennas. A.D. Olver, P.J.B. Clarricoats and K. Raghavan **H** p158
Gaussian beam model for aperture-controlled and flareangle-controlled corrugated horn antennas. P.-S. Kildal **H** p237
Inexpensive multi-mode satellite tracking feed antenna. P.D. Patel **H** p381
Wide angle corrugated horns analysed using spherical modal-matching. A.D. Olver and J. Xiang **H** p34

ANTENNAS (MEASUREMENTS)

Measurement of anechoic chamber reflections by time-domain techniques. E.N. Clouston, P.A. Langsford and S Evans **H** p93
Phase retrieval radio holography in the Fresnel region: Tests on the 30 m telescope at 86 GHz. D. Morris, H. Hein, H. Steppe and J.W.M. Baars **H** p61
Practical method of predicting transient fields and monopole current waveforms. D.M. Parkes and P.D. Smith **H** p231

ANTENNAS (MICROSTRIP)

Analysis of suspended microstrip taper baluns. B. Climer **H** p65
Conformal microstrip arrays on cylinders. J. Ashkenazy, S. Shtrikman and D. Treves **H** p132
Coplanar corporate feed effects in microstrip patch array design. P.S. Hall and C.M. Hall **H** p180
Curve-fitting formulas for fast determination of accurate resonant frequency of circular microstrip patches. Q. Liu and W.C. Chew **H** p289
Discrete image theory for horizontal electric dipoles in a multilayered medium. D.G. Fang, J.J. Yang and G.Y. Delisle **H** p297
Input impedance and loaded quality factor of a probe exciting dielectric resonator. S. Vigneron and P. Guillon **H** p163
Input impedance of rectangular microstrip antennas. A.K. Bhattacharjee, S.R. Bhadra Chaudhuri, A. Mukherjee, D.R. Poddar and S.K. Chowdhury **H** p351
Simple design formulas for circulatory polarised microstrip antennas. Y.T. LO, B. Engst and R.Q. Lee **H** p213
Simple model for the input impedance of coax-fed rectangular microstrip patch antenna for CAD. F. Abboud, J.P. Damiano and A. Papiernik **H** p323
Superimposed dichroic microstrip antenna arrays. J.R. James and G. Andrasic **H** p304

ANTENNAS (REFLECTORS)

Application of spherical wave expansions to direct GO far field synthesis. M.J. Mehler **H** p41
Multiple dielectric loaded perforated screens as frequency selective surfaces. R. Orta, R. Tascone and R. Zich **H** p75
Phase retrieval radio holography in the Fresnel region: Tests on the 30 m telescope at 86 GHz. D. Morris, H. Hein, H. Steppe and J.W.M. Baars **H** p61
Spherical wave expansions for shaped beam synthesis. M.J. Mehler **H** p327

ANTENNAS (SLOT)

Moment method analysis of a feeding system in a slotted-waveguide antenna. W. Hanyang and W. Wei **H** p313
Resonance characteristics of waveguide slot radiators with moderate width-to-length ratios. A.J. Sangster and A.H.I. McCormick **H** p319

ANTENNAS (THEORY)

Array synthesis with excitation constraints. G. Franceschetti, G. Mazzarella and G. Panariello **H** p400
Closed-form approximation to the bounded part of the exact kernel of a cylindrical antenna integral equation. A. Karwowski **H** p210
Design aspects and tolerances in array fed contour beam antennas of INTELSAT VI type. C.G. Parini, D. Brain, Y. Kalatizadeh, A.D. Olver and K. Raghavan **H** p408
General radiation-pattern synthesis technique for array antennas of arbitrary configuration and element type. R.F.E. Guy **H** p241
Radiation from a flanged parallel-plate waveguide: Solution by moment method *with inclusion of edge condition. M.S. Leong, P.S. Kooi and Chandra* **H** p249
Spherical wave expansions for shaped beam synthesis. M.J. Mehler **H** p327
Synthesis of sum and difference patterns for two-section monopulse arrays. D.A. McNamara **H** p371

ANTENNAS (TIME DOMAIN)

Measurement of anechoic chamber reflections by time-domain techniques. E.N. Clouston, P.A. Langsford and S Evans **H** p93
Practical method of predicting transient fields and monopole current waveforms. D.M. Parkes and P.D. Smith **H** p231

ANTENNAS (TRAVELLING WAVE)

Design of microstrip exponentially tapered lines to match helical antennas to *standard coaxial transmission lines. S.P. Mathur, A.K. Sinha and A.K. Sinha* **H** p272
Improved design of the vivaldi antenna. Ehud Gazit **H** p89

ANTENNAS (WIRE)

Dielectrically loaded wire antennas. J.P. Casey and R. Bansal **H** p103
Frequency-domain analysis of a large NEMP-simulator wire antenna. B.D. Popović **H** p135

ARCING

'Local' conditioning of broad-area vacuum-insulated high-voltage electrodes. R.V. Latham and T.J. Fielding **A** p508
Active network for correcting impulse-voltage measurements. X. Liang and G.O. Martens **A** p487
Arcs in boundary layer flow. S. Au and P.R. Smy **A** p69
Statistical analysis of flashover data using a generalised likelihood method. A.J. Davies, A.R. Rowlands, R. Turri and R.T. Waters **A** p79

ARRAY PROCESSING

Design of a systolic array system for linear state equations. S.-J. Jou and C.-W. Jen **G** p211
Heuristic algorithm for the minimisation of generalised Boolean functions. G. Caruso **E** p108
Implementation of digital filters via VLSI array processors. B.G. Mertzios and V.L. Syrmos **G** p78
Low cost serial multipliers for high-speed specialised processors. L. Ciminiera and A. Valenzano **E** p259 **E** e340
New method for computing Dolph-Chebyshev arrays, and its comparison with other methods. F. Ares and E. Moreno **H** p129
Parallel architecture modified Booth multiplier. A.R. Cooper **G** p125

ATTENUATORS

Correlation properties of rainfall rates in the United Kingdom. H. Fukuchi **H** p83

BATTERIES AND CELLS

CMOS integrated circuit for differential monitoring of spacecraft battery cell voltages. L.G. van den Berghe **I** p151

BIOLOGICAL EFFECTS

Review of physical diagnostic techniques in medicine and biology: technical progress and future requirements. D.F. Jackson **A** p375

BIOMEDICAL APPLICATIONS

Review of physical diagnostic techniques in medicine and biology: technical progress and future requirements. D.F. Jackson **A** p375
Self-tuning control of hypotension during ENT surgery using a volatile anaesthetic. R.K. Millard, C.R. Monk and C. Prys-Roberts **D** p95

BOOLEAN ALGEBRA

Towards effective nonlinear cryptosystem design. J. Pieprzyk and G. Finkelstein **E** p325

BREAKDOWN AND GAS DISCHARGES

'Local' conditioning of broad-area vacuum-insulated high-voltage electrodes. R.V. Latham and T.J. Fielding **A** p508
A photon-triggered spark gap. N.L. Allen, S. Bower and D.J. Mellor **A** p56
Diagnostic measurements at UHF in gas insulated substations. B.F. Hampton and R.J. Meats **C** p137
Effect of humidity and gas density on switching impulse breakdown of short airgaps. A.J. Davies, J. Dutton, R. Turri and R.T. Waters **A** p59
Electrostatic precipitators. K.J. McLean **A** p347
Some observations on the failure locus of *npn* transistors and its improvement using graded collector structures. M.J. Humphreys and K.I. Nuttall **I** p85
Statistical analysis of flashover data using a generalised likelihood method. A.J. Davies, A.R. Rowlands, R. Turri and R.T. Waters **A** p79
Surface recombination of ions and cratering by ion impact. K.G. Emeleus and J.R.M. Coulter **A** p76

CABLES AND OVERHEAD LINES

Alternative solution for the Chowdhuri–Gross model of lightning-induced voltages on power lines. M.K. Haldar and A.C. Liew **C** p324
New monitor for pollution on power line insulators Part 2: Simulated field tests. M. Khalifa, A. El-Morshedy, O.E. Gouda and S.E.-D. Habib **C** p24
Scheme, based on travelling-waves, for the protection of major transmission lines. C. Christopoulos, D.W.P. Thomas and A. Wright **C** p63
Supertension or superconducting cables: 20 years on — can the UK regain the lead?. D.R. Edwards **C** p9
Thermal analysis of a multicore cable. D.S. Thompson and M.R. Wilson **C** p79

CALIBRATION

Design of a portable thermocouple calibrator. W.A. Evans and S.L. Rowlands **A** p33

New lightning flash counter and calibration circuit with improved discrimination of cloud and ground discharges. E.O. Oladiran, E. Pisler and S. Israelsson A p22
The six-port reflectometer and its complete calibration by four stadard terminations. F.M. Ghannouchi and R.G. Bosisio H p285

CIRCUIT BREAKERS AND CIRCUIT BREAKING

Arc transfer in a rotary arc circuit breaker. Q. Jiali and G.R. Jones C p511
Shunt reactor switching tests in BC Hydro's 500 kV system. D.F. Peelo, B.L. Avent, J.E. Drakos, B.C. Giudici and J.R. Irvine C p420
Use of an auto-expansion circuit breaker in a ring main unit. G. Bernard, G. Perrissin and J. Marzocca C p219

CIRCUIT THEORY AND DESIGN

CMOS ternary flip-flops and their applications. F. Prosser, X. Wu and X. Chen E p266 E e340
Calculation of the discrete Hartley transform via the Fermat number transform using a VLSI chip. S. Boussakta and A.G.J. Holt G p101
Calculation of the driving-point impedance of a two-terminal network by the dual variational method. E. Moreno and C. Rey G p97
Computation of time response for linear networks: a novel approach. J.C. Mandojana and A. Ambardar G p155
Current equalising transformer for current balance in parallel-connected 12-pulse converter. F.T. Bennell B p85
Design methodologies for *C–2C* ladder-based D/A convertors for PCM codecs. S.P. Singh, A. Prabhakar and A.B. Bhattacharyya G p133
Design of a systolic array system for linear state equations. S.-J. Jou and C.-W. Jen G p211
Design, selection and implementation of a content-addressable memory for a VLSI CMOS chip architecture. S. Jones E p165
Discretionary channel routing. H.W. Leong and C.L. Liu G p45
Dual resonance. D. Kajfez H p141
General analysis of large linear switched capacitor networks. L.B. Wolovitz and J.I. Sewell G p119
Gradient approximation method for circuit optimisation. I.K. Moukarzel and C.M. Vidallon G p129
High-level microprogramming support embedded in silicon. R.F. Hobson E p73
Integrable electronically tunable current conveyors. W. Surakampontorn and P. Thitimajshima G p71
Logarithmic and exponential switched-capacitor convertors and some of their applications. A. Cichocki and R. Unbehauen G p58
New floating point impedance simulation using operational amplifiers. V. Singh G p116
Novel wide-range electronically tunable ideal grounded inductance. I.A. Khan, M.T. Ahmed and T. Parveen G p104
Parallel architecture modified Booth multiplier. A.R. Cooper G p125
Silicon flow sensors. B.W. van Oudheusden D p373
Solving SPICE problems. R.D. Castro G p177
Symple: a symbolic layout tool for bipolar and MOS VLSI. K.S.B. Szabó, J.M. Leask and M.I. Elmasry I p29
Systematic design strategy for concurrent error diagnosable iterative logic arrays. S.-W. Chan, S.S. Leung and C.-L. Wey E p87
Traversing the VLSI design hierarchy for a new, fast systolic stack. H.F. Li, D.K. Probst and R.N. Prasad E p25

CLOSED-LOOP SYSTEMS

Eigenstructure assignment by output feedback in descriptor systems. L.R. Fletcher D p302
Generalised predictive control with input constraints. T.T.C. Tsang and D.W. Clarke D p451
Wide-range power system pole placer. H.M. Soliman and M.M.F. Sakr C p195

COAXIAL CABLES

Static fringing capacitance of a dielectric loaded coaxial termination. J.D. Mahony A p448

CODES AND DECODING

Algorithm for adaptive error control system synthesis. B. Vučetić, D. Drajić and D. Perišić F p85
Autocorrelation and power spectrum of Hadamard signalling. S.G. Wilson and M. Lakshman F p258
Clock-controlled shift registers in binary sequence generators. W.G. Chambers E p17
Correlation properties of dual-BCH, Kasami and other sequences for spread-spectrum, multiple-access systems. C.S. Goswami and M. Beale F p114
Design methodologies for *C–2C* ladder-based D/A convertors for PCM codecs. S.P. Singh, A. Prabhakar and A.B. Bhattacharyya G p133
Detection processes for V32 modems using trellis coding. J.P. Driscoll and N. Karia F p143
Effect of channel errors on source coded image data and the provision of adequate protection of transmission bits. R.L. Brewster and T.E. Dodgson F p528
Embedded coding technique: principles and theoretical studies. M. Darnell, B.K. Honary and F. Zolghadr F p43
Estimating the conditional entropy of a digital television signal. M.J. Knee F p431
Formant estimation algorithm based on pole focusing offering improved noise tolerance and feature resolution. G. Duncan and M.A. Jack F p18
Generators for sequences with near-maximal linear equivalence. W.G. Chambers and D. Gollmann E p67
Integration of channel coding and modulation in the ARQ protocols. G. Benelli F p577
Lossless progressive image transmission by residual error vector quantiation. L. Wang and M. Goldberg F p421 F e576
Lossless progressive image transmission by residual error vector quantisation. L. Wang and M. Goldberg F e576
Near-maximum-likelihood decoding of convolutional codes. Z.C. Zhu and A.P. Clark F p33
New class of double inductive binary error correcting codes based on the class of Reed–Muller codes. D. Kabilafkas and L.F. Turner F p507
Sequential block interleave coding of two-tone facsimile data. B.S. Tan and L.F. Turner E p95
Simulated Viterbi decoding using importance sampling. M.A. Herro and J.M. Nowack F p133

COMMUNICATION SYSTEMS THEORY

Class of optimum signal shapes in data transmission. E. Panayirci and N. Tuğbay F p272
Investigation of an optoelectronic nonlinear effect in a GaInAs photodiode, and its application in a coherent optical communication system. D.A. Humphreys and R.A. Lobbett J p45
Performance analysis of GMSK frequency detection with decision feedback *equalisation in digital land mobile radio. F. Adachi and K. Ohno F p199*

COMPONENTS

Analysis of harmonic injection frequency dividers with three-terminals devices. F. Sierra and J. Pérez H p70
Block pulse functions based algorithm for symmetrical components calculation. S.R. Kolla C p487
Power components in a system with sinusoidal and nonsinusoidal voltages *and/or currents. M.A. Slonim and J.D. Van Wyk B p76*
Resonance frequencies and behaviour of the impatt cap oscillator. J.R.G. Twisleton H p196

COMPUTER APPLICATIONS

Algorithms for multiplication in Galois field for implementation using systolic arrays. S. Bandyopadhyay and A. Sengupta E p336
Characteristics and optimal design of variable airgap linear force motors. M.C. Leu, E.V. Scorza and D.L. Bartel B p341
Clock-controlled shift registers in binary sequence generators. W.G. Chambers E p17
Computer assessment of IDMT relay performance for phase and earth faults on interconnected power systems. D. Lidgate and H. Askarian Abyaneh C p157
Computer package for calculating electric and magnetic fields exploiting dual *energy bounds. J.K. Sykulski A p145*
Computer-based supervisory control and energy management system for the city of Cape Town. A.P.J. Malt, G.D. Clarke and P.E. Robinson C p41
Design of a portable thermocouple calibrator. W.A. Evans and S.L. Rowlands A p33
ESPNET: expert-system-based simulator of Petri nets. J. Duggan and J. *Browne D p239*
Economic approach to fault-tolerant synchronisation. A.H. Infis and W.R. Moore E p82
Fast bridge for efficient LAN–LAN coupling. M.J. Santana, R.H.C. Santana and E.J. Zaluska E p270
Filtering of network addresses in real time by sequential decoding. P. Wolstenholme E p55
General waveform shape analyser. P.F. Lister and M.L. Bishop E p241
Generation expansion planning: an expert system approach. S.A. Farghal, M.S. Kandil and M.R. Abdel-Aziz C p261
MCHSE: a versatile framework for the design of two-level power system state estimators. J.F. Marsh and M. Azzam C p291
Modified least squares method with application to diffraction and eigenvalue problems. LJ. Stanković and S. Jovićević H p339
New method for computing Dolph-Chebyshev arrays, and its comparison with other methods. F. Ares and E. Moreno H p129
Optimal PWM microprocessor-controlled current-source inverter drives. S.R. Bowes and R.I. Bullough B p59
Optimal operational planning for a hydro-electric generation system. D. Lidgate and B.H. Amir C p169
Scale based algorithm for recognition of blurred planar objects. D.T. Nguyen and Ding-Yi Xu E p307
Simplified procedure for correcting both errors and erasures of Reed–Solomon code using Euclidean algorithm. T.K. Truong, W.L. Eastman, I.S. Reed and I.S. Hsu E p318
Systolic array for the quotient difference algorithm. D.J. Evans and G.M. Megson E p60
TSC-error C/D circuits for SEC/DED product codes. N. Gaitanis E p253
Techniques for improving stability rate of linear predictive image coding schemes. M. Andrews and D.T. Nguyen E p298
Towards effective nonlinear cryptosystem design. J. Pieprzyk and G. Finkelstein E p325
Two-level state estimation for large power system Part 1: Algorithms. K.L. Lo, M.M. Salem, R.D. McColl and A.M. Moffatt C p299
Two-level state estimation for large power system. Part 2: Computational experience. K.L. Lo, M.M. Salem, R.D. McColl and A.M. Moffatt C p309
Wafer scale integration. J.B. Butcher and K.K. Johnstone E p281

COMPUTER SIMULATION

Class-IV PRS above the Nyquist rate. Wu, Kuang-Tsan, Sasase, Iwao and Feher, Kamilo F p183
Computation of temperature field and moisture content in the vicinity of current carrying underground power cables. G.J. Anders and H.S. Radhakrishna C p51
Design of a portable thermocouple calibrator. W.A. Evans and S.L. Rowlands A p33
Digital simulation of *B/H* excursions for power system studies. S. Ray C p202
ESPNET: expert-system-based simulator of Petri nets. J. Duggan and J. Browne D p239
Flux penetration and losses in steel plate with nonsinusoidal magnetisation. D. O'Kelly A p193
Losses and flux penetration in non-grain-oriented low-loss steel with non-sinusoidal excitation. D. O'Kelly A p199
Modified algorithm for steady-state integrated system optimisation and parameter estimation. J. Lin, S. Chen and P.D. Roberts D p119
RF analysis of a 12-pulse HVDC convertor. R.V. DeVore, D.F. Kimball, D.G. Kasten and R. Caldecott C p210
Solving SPICE problems. R.D. Castro G p177

COMPUTER-AIDED DESIGN

A research group's CACSD environment. S. de la Salle, D. Ho and M.J. Grimble A p223
Computer-aided design of PWM power-electronic variable-speed drives. S.R. Bowes and J.C. Clare B p240
Design and layout of microstrip structures. F.E. Gardiol H p145
Design of integrated optical circuits using finite elements. T.P. Young A p135
Design of log-periodic dipole antennas. C. Peixeiro H p98
Discretionary channel routing using score function. K.-P. Tan and T.-S. Tan I p49

Gradient approximation method for circuit optimisation. I.K. Moukarzel and C.M. Vidallon G p129
Symple: a symbolic layout tool for bipolar and MOS VLSI. K.S.B. Szabó, J.M. Leask and M.I. Elmasry I p29
Thermal CAD of power hybrid devices using light computer means. A. Napieralski and F. Pompignac G p34

CONDUCTORS AND CONDUCTIVITY

Electromagnetic shielding in a system of two slabs. S.M. Panas and E.E. Kriezis A p451

CONTROL EQUIPMENT AND APPLICATIONS

Adaptive controller for a turbogenerator system. Q.H. Wu and B.W. Hogg D p35
Analysis of coloured filter controllers for bank-to-turn CLOS guidance. G.W. Irwin and R.J. Fleming D p486
Analysis of the technique of robust eigenstructure assignment with application to aircraft control. S.K. Mudge and R.J. Patton D p275
Analytical redundancy using band-limiting filters. J.G. Jones and M.J. Corbin D p257
Automotive transducers: an overview. M.H. Westbrook D p339
Development of a rotating-shaft torque sensor for automotive applications. J.D. Turner D p334
ESPNET: expert-system-based simulator of Petri nets. J. Duggan and J. Browne D p239
Effective approximations suitable for the control algorithm of microprocessor-based cycloconvertor. S. Miyazawa, F. Nakamura and N. Yamada B p159
High-sensitivity optopneumatic convertor. K.F. Hale, C. Clark, R.F. Duggan and B.E. Jones D p348
Miniature silicon resonant pressure sensor. J.C. Greenwood and D.W. Satchell D p369
Minimax design of optimal stochastic multivariable systems. M.J. Grimble D p436
Multipurpose adaptive control in deterministic multivariable systems. B.-S. Chen and C.-M. Lin D p282
Multivariable control of a liquid–liquid extraction column using a probabilistic automaton. K. Najim D p479
Multivariable self-tuning control with decoupling for robotic manipulators. M.-H. Liu and W. Lin D p43
NMOS flip-flop sensors: a multipurpose digital-output sensor technique. P.J. French, W. Lian and S. Middelhoek D p359
On the improvement of an adaptive observer for multi-output systems. N. Hori, P.N. Nikiforuk, K. Kanai and S. Uchikado D p67
Robust self-tuning regulator for a synchronous generator. Q.H. Wu and B.W. Hogg D p463
Self-tuning control of hypotension during ENT surgery using a volatile anaesthetic. R.K. Millard, C.R. Monk and C. Prys-Roberts D p95
Sensors and transducers (Editorial). B.V. Jayawant and S.C. Goodwin D p333
Silicon flow sensors. B.W. van Oudheusden D p373

CONTROL SYSTEMS

3-phase voltage sourced reversible rectifier. A.W. Green, J.T. Boys and G.F. Gates B p362
A research group's CACSD environment. S. de la Salle, D. Ho and M.J. Grimble A p223
Adaptive model following control of electrohydraulic velocity control systems subjected to unknown disturbances. J.S. Yun and H.S. Cho D p149
Analysis of singular systems using orthogonal functions. B.G. Mertzios, F.L. Lewis and G. Vachtsevanos D p323
Analysis of the technique of robust eigenstructure assignment with application to aircraft control. S.K. Mudge and R.J. Patton D p275
Analysis of time-varying singular systems via single-term Walsh-series approach. K.R. Palanisamy and K. Balachandran D p461
Analytical redundancy using band-limiting filters. J.G. Jones and M.J. Corbin D p257
Are we in control?. B.V. Jayawant D p1
Automated cynthesis of microprogrammed controllers in digital systems. L.-F. Sun, J.-M. Liaw and T.-M. Parng E p231
Automatic controls in building services. M.V. Harrold and D.M. Lush B p105
Co-ordinate determination and performance analysis for robot manipulators and guided vehicles. M. Dickinson and A.S. Morris A p95
Computer-based supervisory control and energy management system for the city of Cape Town. A.P.J. Malt, G.D. Clarke and P.E. Robinson C p41
Controller designs for model-plant parameter mismatch. J.A. Romagnoli, M.N. Karim, O.E. Agamennoni and A. Desages D p157
Decoupling and data sensitivity in singular systems. B.G. Mertzios and M.A. Christodoulou D p106
Discrete-time adaptive control for time-varying systems subject to unknown fast time-varying deterministic disturbances. Z. Li D p445
Eigenstructure assignment by output feedback in descriptor systems. L.R. Fletcher D p302
Exact model-matching control of linear discrete-time systems by periodic state or output feedback. T.G. Pimenides D p426
Further result on performance degradation for nonlinear multivariable systems. R.F. Harrison and B. Kouvaritakis D p326
Generalised predictive control with input constraints. T.T.C. Tsang and D.W. Clarke D p451
Improvement of current loop response of thyristor DC drive by time-domain approximation. D. Drake and P. Lindon B p261
Leak detection and location in gas pipelines. A. Benkherouf and A.Y. Allidina D p142
Linear system reduction using approximate moment matching. A.M. Davidson and I.R. Walters D p73
Miniature silicon resonant pressure sensor. J.C. Greenwood and D.W. Satchell D p369
Modelling, analysis and control of a wind-turbine driven self-excited induction generator. Y. Üçtuğ and M. Demirekler C p268
Modified algorithm for steady-state integrated system optimisation and parameter estimation. J. Lin, S. Chen and P.D. Roberts D p119
Multipurpose controller synthesis in LQG optimal systems. B.S. Chen and W.J. Wang D d329
New current control scheme for PWM inverters. P. Enjeti, J.F. Lindsay, P.D. Ziogas and M.H. Rashid B p172
Optimal control of linear time-varying delay systems via single-term Walsh series. K.R. Palanisamy, K. Balachandran and R.S. Ramasamy D p332
Parametric identification of nonlinear dynamic systems based on nonlinear crosscorrelation functions. R. Haber D p405
Phase-locked oscillator control system for thyristor-controlled reactors. J.D. Ainsworth C p146
Questions of controllability and observability for nonuniformly sampled discrete systems. A. Fuster and J.M. Guillen D p248
Robustness analysis of discrete-time adaptive control systems using input-output stability theory: a tutoral. W.R. Cluett, S.L. Shah and D.G. Fisher D p133
Scalar control: an alternative AC drive philosophy. J.T. Boys and S.J. Walton B p151
Self-tuning control of hypotension during ENT surgery using a volatile anaesthetic. R.K. Millard, C.R. Monk and C. Prys-Roberts D p95
Self-tuning control of systems with infrequent and delayed output sampling. R. Scattolini D p213
Sensors and transducers (Editorial). B.V. Jayawant and S.C. Goodwin D p333
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh and R.E. Yates D e181
Software control of static reactive current compensators. P.T. Ho and S.K. Tso C p518
Stochastic time-optimal control problems. W. Zhang and D. Elliott D p395
Systems theory and systems engineering. L. Finkelstein, F. Land, E.R. Carson and J.H. Westcott A p401
Time-domain robustness and performance optimisation of linear quadratic control problems. R.I. Badr, M.F. Hassan, J. Bernussou and A.Y. Bilal D p223
Two-loop self-tuning cascade control. P.J. Gawthrop and M. Kharbouch D p232

CONTROL THEORY

Analysis of singular systems using orthogonal functions. B.G. Mertzios, F.L. Lewis and G. Vachtsevanos D p323
Analysis of time-varying singular systems via single-term Walsh-series approach. K.R. Palanisamy and K. Balachandran D p461
Application of nonlinear system transformations to control design for a chemical reactor. J. Alvarez-Gallegos D p90
Characteristic decomposition and the multivariable generalisation of predictive self-tuning control. D.J. Cloud and B. Kouvaritakis D p165
Determination of weighting polynomials in generalised minimum variance controllers. R.S. Mendes, W.C. Amaral and L.G. Latre D p21
Frequency-response method for linear multivariable systems simplification. S.K. Wing and H. Nicholson D p381
Further result on performance degradation for nonlinear multivariable systems. R.F. Harrison and B. Kouvaritakis D p326
Generalised predictive control with input constraints. T.T.C. Tsang and D.W. Clarke D p451
Multivariable control of a liquid–liquid extraction column using a probabilistic automaton. K. Najim D p479
New pole assignment algorithm with reduced norm feedback matrix. R.G. Cameron D p111
Optimal control of linear time-varying delay systems via single-term Walsh series. K.R. Palanisamy, K. Balachandran and R.S. Ramasamy D p332
Questions of controllability and observability for nonuniformly sampled discrete systems. A. Fuster and J.M. Guillen D p248
Robust self-tuning regulator for a synchronous generator. Q.H. Wu and B.W. Hogg D p463
Self-tuning control of systems with infrequent and delayed output sampling. R. Scattolini D p213
Stochastic time-optimal control problems. W. Zhang and D. Elliott D p395
Synthesis of control laws with specified gain and phase margin and poles region. T.-T. Lee and S.-H. Lee D p474
Two-loop self-tuning cascade control. P.J. Gawthrop and M. Kharbouch D p232

CONVERTORS

High-sensitivity optopneumatic convertor. K.F. Hale, C. Clark, R.F. Duggan and B.E. Jones D p348
New improved modulation method for a cycloconvertor driving an induction motor. G.P. Hunter and V.S. Ramsden B p324
RF analysis of a 12-pulse HVDC convertor. R.V. DeVore, D.F. Kimball, D.G. Kasten and R. Caldecott C p210

CYBERNETICS AND ROBOTICS

Co-ordinate determination and performance analysis for robot manipulators and guided vehicles. M. Dickinson and A.S. Morris A p95
Industrial applications of computer vision since 1982. Dr. A.M. Wallace E p117

DECODING

Filtering of network addresses in real time by sequential decoding. P. Wolstenholme E p55

DESIGN

A research group's CACSD environment. S. de la Salle, D. Ho and M.J. Grimble A p223
Algorithm for design centering based on use of sensitivity information. N.G. Maratos G p11
Co-ordinated design of multimachine power system stabilisers based on damping torque concepts. M.J. Gibbard C p276
Controller designs for model-plant parameter mismatch. J.A. Romagnoli, M.N. Karim, O.E. Agamennoni and A. Desages D p157
Design of a portable thermocouple calibrator. W.A. Evans and S.L. Rowlands A p33
Highly parallel processors in military systems. J.B.G. Roberts, B.C. Merrifield, P. Simpson and J.S. Ward E p202
Multiple single-chip microcomputer approach to fire detection and monitoring system. A.J. Al-Khalili, D. Al-Khalili and M.S. Khassem G p1
New design of composite controllers for synchronous machines via separation of timescales. N.P. Singh, Y.P. Singh and S.I. Ahson D p182
Optimal designs for multilayer air-cored toroidal inductors with circular windows. P.N. Murgatroyd B p202
Optimised design of even-order optical low-pass and high-pass multilayer filters by method of coefficient matching. T.C. Chen J p359
Optimised design of odd-order optical lowpass and highpass multilayer filters by method of coefficient matching. T.C. Chen J p166

Polyhedral dynamics applied to design and project management. B. Bolton A p241
Quantitative design of robust multivariable control systems. O.D.I. Nwokah D d404
Quantitative design of robust multivariable control systems. Y.K. Foo D d404
Quatitative design of robust multivariable control systems. O.D.I. Nwokah D p57
Self-test: the solution to the VLSI test problem?. K. Totton and S. Shaw E p190
Stability and performance bounds for the linearisation-based analysis and design of multivariable nonlinear systems. D. Valsamis, D.H. Owens and J.O. Gray D p79
Systems theory and systems engineering. L. Finkelstein, F. Land, E.R. Carson and J.H. Westcott A p401
Traversing the VLSI design hierarchy for a new, fast systolic stack. H.F. Li, D.K. Probst and R.N. Prasad E p25

DETECTION

Adaptive frame synchroniser for digital satellite communication systems. L.-K. Shark, T.J. Terrell and R.J. Simpson F p51
Analysis and application of the excision CFAR detector. H. Goldman and I. Bar-David F p563
Design of narrow-linewidth phase-shifted distributed feedback lasers. P. Correc J p64
Embedded coding technique: principles and theoretical studies. M. Darnell, B.K. Honary and F. Zolghadr F p43
Performance of the greater-of and censored greater-of detectors in multiple target environments. Emad K. Al-Hussaini F p193
Rapid acquisition scheme for spread-spectrum radio in a fading environment. N.D. Wilson, S.S. Rappaport and M.M. Vasudevan F p95
Silicon resonator sensors: interrogation techniques and characteristics. M.J. Tudor, M.V. Andres, K.W.H. Foulds and J.M. Naden D p364
Space-based radar: narrowing the main-beam clutter spectrum through the use of a high-aspect-ratio antenna. P. Weber and S. Haykin F p73
Theoery for heterodyne optical ASK receivers using square-law detection and postdetection filtering. G. Jacobsen and I. Garrett J p100
Two-channel direct-bit detection receiver for 16-PSK modulated signals. D.C. Bukofzer F p461 F e576

DIELECTRIC MATERIALS

Ammeter induced perturbations of Argand diagrams for Debye-like dielectrics. R. Ongaro, A. Pillonnet and P. Desgoutte A p41
Analysis of a multilayer coated optical planar waveguide termination. C.N. Capsalis and N.K. Uzunoglu J p153
How the electrical properties of soil affect the surge performance of buried long systems. F. Lattarulo A p51
Improved design of the vivaldi antenna. Ehud Gazit H p89
Impulse flashover along the outer surface of a cylindrical dielectric solid with a gas layer inside. M. Ohki and S. Saito A p99 A e447
Microwave simulation of optoelectronic bending loss in presence of dielectric discontinuity. T.M. Benson, P.C. Kendall and M.S. Stern J p325
Novel method of measuring dielectric properties at 100 GHz using a groove-guide resonator. Y.M. Choi H p138
Semivectorial polarised *H* field solutions for dielectric waveguides with arbitrary index profiles. M.S. Stern J p333
Semivectorial polarised finite difference method for optical waveguides with arbtitrary index profiles. M.S. Stern J p56
Solution of the resonant frequencies of a cavity resonator by boundary element method (BEM). W. Geyi and W. Hongshi H p361
Solution of the resonant frequencies of a microwave dielectric resonator using boundary element method. W. Geyi and W. Hongshi H p333
Static fringing capacitance of a dielectric loaded coaxial termination. J.D. Mahony A p448
Waveguiding and temperature characteristics of threshold current and amplitude-phase coupling coefficient in double-heterostructure lasers. A.P. Bogatov J p226

DIGITAL ARITHMETIC

Parallel architecture modified Booth multiplier. A.R. Cooper G p125

DIGITAL CIRCUITS

Calculation of the discrete Hartley transform via the Fermat number transform using a VLSI chip. S. Boussakta and A.G.J. Holt G p101
Convergence behaviour of the first-order multi-sampling digital tanlock loop. W.D. Cho and C.K. Un F p457 F e576
Diminished-1 multiplier for a fast convolver and correlator using the Fermat number transform. S.S. Dlay, M. Benaissa, A. Bouridane and A.G.J. Holt G p187
Discretionary channel routing. H.W. Leong and C.L. Liu G p45
Dynamic capacitance effects in DRAM word lines. W.H. Henkels I p!
Fast multidimensional discrete Hartley transform using Fermat number transform. S. Boussakta and A.G.J. Holt G p253
Fault diagnosis in combinational digital circuits using a backtrack algorithm to generate fault location hypotheses. S.J. Sangwine G p247
Filter realisation by passive network simulation. Li Ping and J.I. Sewell G p167
General experimental method of parameter extraction for CMOS timing macro-models. C.-Y. Wu, W.-Y. Jang and H.-J. Wu I p39
Generators for sequences with near-maximal linear equivalence. W.G. Chambers and D. Gollmann E p67
High-level microprogramming support embedded in silicon. R.F. Hobson E p73
Optical tristability and associated ternary digital functions using a twin-stripe laser diode. M. Watanabe, S. Mukai, H. Itoh and H. Yajima J p74
Practical implementations of block-mode image filters using the Fermat number transform on a microprocessor-based system. A.Y.Md. Shakaff, A. Pajayakrit and A.G.J. Holt G p141
Systolic array implementation of a decimator and an interpolator. H.K. Kwan and T.S. Okullo-Oballa E p70
TSC-error C/D circuits for SEC/DED product codes. N. Gaitanis E p253
Testing of random access memories: theory and practice. P.K. Veenstra, F.P.M. Beenker and J.J.M. Koomen G p24
Traversing the VLSI design hierarchy for a new, fast systolic stack. H.F. Li, D.K. Probst and R.N. Prasad E p25

DIGITAL COMMUNICATION SYSTEMS

Adaptive frame synchroniser for digital satellite communication systems. L.-K. Shark, T.J. Terrell and R.J. Simpson F p51
Asymptotic behaviour of bit error rate for bandpass direct-sequence spread-spectrum modulation systems. L. Alcuri, G. Mamola and E. Randazzo F p487
Autocorrelation and power spectrum of Hadamard signalling. S.G. Wilson and M. Lakshman F p258
Class of optimum signal shapes in data transmission. E. Panayirci and N. Tuğbay F p272
Class-IV PRS above the Nyquist rate. Wu, Kuang-Tsan, Sasase, Iwao and Feher, Kamilo F p183
Detection processes for V32 modems using trellis coding. J.P. Driscoll and N. Karia F p143
ENCAP-4: an OQPSK-type modulation technique for digital radio. A.M. Gusmão and N.L. Esteves F p105
Estimating the conditional entropy of a digital television signal. M.J. Knee F p431
Filtering of network addresses in real time by sequential decoding. P. Wolstenholme E p55
Fourier–Bessel error performance analysis of 0M-ary QAM signalling through AWGN and cochannel interferences. M. Gouta and S.A. Kosmopoulos F p450
Lossless progressive image transmission by residual error vector quantiation. L. Wang and M. Goldberg F p421 F e576
Lossless progressive image transmission by residual error vector quantisation. L. Wang and M. Goldberg F e576
Modular, offline, full duplex telephone channel simulator for high speed data transceiver evaluation. S. Dimolitsas and J.E. Gunn F p155
Near-maximum-likelihood decoding of convolutional codes. Z.C. Zhu and A.P. Clark F p33
Optimum patterns for frame alignment. M. Nazir Al-Subbagh and E.V. Jones F p594
Performance analysis of GMSK frequency detection with decision feedback equalisation in digital land mobile radio. F. Adachi and K. Ohno F p199
Performance of a 16-ARY DEQAM modem employing a baseband or RF predistorter over a regenerative satellite link. S.W. Cheung and A.H. Aghvami F p547
Sequential block interleave coding of two-tone facsimile data. B.S. Tan and L.F. Turner E p95
Simultaneous voice and data transmission in private mobile radio using a narrowband FM channel. M.O. Al-Nuaimi and M. Charnley F p439
Transfer function parameters in multipath channel modelling. T. Raji F p262
Two-channel direct-bit detection receiver for 16-PSK modulated signals. D.C. Bukofzer F p461 F e576

DIGITAL COMPUTERS AND COMPUTATION

NMOS flip-flop sensors: a multipurpose digital-output sensor technique. P.J. French, W. Lian and S. Middelhoek D p359
XPXM/C: a taxonomy of processor coupling techniques. R. Artym and J.S. Mason E p173

DIGITAL CONTROL

Design of a digital protection scheme for power transformers using optimal state observers. Y.V.V.S. Murty, W.J. Smolinski and S. Sivakumar C p224
Digital synchronisation of switching transistors. D.W. Auckland, R. Shuttleworth and T.W. Wong B p97
NMOS flip-flop sensors: a multipurpose digital-output sensor technique. P.J. French, W. Lian and S. Middelhoek D p359

DIGITAL FILTERS

Design of N-dimensional multiplierless spherically symmetric FIR digital filters by transformation. C. Charalambous G p203
Design of minimum phase FIR digital filters. N.N. Chit and J.S. Mason G p258
Implementation of digital filters via VLSI array processors. B.G. Mertzios and V.L. Syrmos G p78
Minimax design of 2D FIR linear phase digital filters. C. Charalambous and H. Khreishi G p194
Reconfigurable programmable architecture for cascaded unit elements and lattice WDFs. P.S. Matharu and S.S. Lawson G p181

DIGITAL INSTRUMENTATION

Co-operative research into the engineering and design of a new digital directional comparison scheme. A.T. Johns and E.P. Walker C p334

DIGITAL-ANALOGUE CONVERSION

Design methodologies for *C–2C* ladder-based D/A convertors for PCM codecs. S.P. Singh, A. Prabhakar and A.B. Bhattacharyya G p133

DIODES

Analysis of nonideal solid-state photomultiplier (SSPM) for optical receivers. R.S. Fyath and J.J. O'Reilly J p423
Bistability in inhomogeneously pumped quantum well laser diodes. A.I. Kucharska, P. Blood, E.D. Fletcher and P.J. Hulyer J p31
Computation of large signal GaAs Impatt diode parameters from closed form analytical solution. S.R. Shukla, Prem Swarup and M.N. Sen I p13
Frequency response characterisation of superlattice avalanche photodiodes. R.S. Fyath and J.J. O'Reilly J p413
InGaAs *pin* photodiodes on recessed semi-insulating GaAs substrates. P.D. Hodson, R.H. Wallis, J.I. Davies and H.E. Shephard J p2
Investigation of an optoelectronic nonlinear effect in a GaInAs photodiode, and its application in a coherent optical communication system. D.A. Humphreys and R.A. Lobbett J p45
Optical-fibre sensors using micromachined silicon resonant elements. R.E. Jones, J.M. Naden and R.C. Neat D p353
Theory of avalanche diode harmonic optoelectronic mixer. Muhammad Taher Abuelma'atti J p183
Transient analysis of Schottky-barrier diodes. A. McCowen, S.B.H. Shaari and K. Board I p71

DISCHARGES, ELECTRIC

'Local' conditioning of broad-area vacuum-insulated high-voltage electrodes. R.V. Latham and T.J. Fielding A p508

Active network for correcting impulse-voltage measurements. X. Liang and G.O. Martens A p487
Arcs in boundary layer flow. S. Au and P.R. Smy A p69

DISCHARGES, GAS

A photon-triggered spark gap. N.L. Allen, S. Bower and D.J. Mellor A p56
Effect of humidity and gas density on switching impulse breakdown of short airgaps. A.J. Davies, J. Dutton, R. Turri and R.T. Waters A p59
Impulse flashover along the outer surface of a cylindrical dielectric solid with a gas layer inside. M. Ohki and S. Saito A p99 A e447
Surface recombination of ions and cratering by ion impact. K.G. Emeleus and J.R.M. Coulter A p76

DISTRIBUTION NETWORKS

Diakoptic mesh analysis of limited size power supply systems. K. Gregory, J.G. Kettleborough and I.R. Smith C p124
New method for transmission planning using mixed-integer programming. M.A. Farrag and M.M. El-Metwally C p319

EARTHING

Proximity effects on the ground fault current distribution within the earthing system formed by a substation and the associated transmission lines. J.M. Nahman C p497

EDDY CURRENTS

Analysis of a perpendicular-type eddy-current speed meter. N. Takehira and A. Tanaka A p89
Comparison of different boundary integral formulations when coupled with finite elements in three dimensions. Z. Ren, F. Bouillault, A. Razek and J.C. Verite A p501
Electromagnetic shielding in a system of two slabs. S.M. Panas and E.E. Kriezis A p451
Error-based derivation of complementary formulations for the eddy-current problem. J. Rikabi, C.F. Bryant and E.M. Freeman A p208
Finite element method for 3D eddy current flow in thin conducting sheets. D. Rodger and N. Atkinson A p369
Foucault currents in a conducting sphere moving with constant velocity. J. Van Bladel A p463
Integral formulation for 3D eddy-current computation using edge elements. R. Albanese and G. Rubinacci A p457
Motion of a conducting loop in a magnetic field. J.G. Van Bladel A p217
On certain properties of the electric vector potential in eddy-current problems. Part 2. M.R. Krakowski A e432
Some aspects of two- and three-dimensional transient-eddy-current modelling using finite elements and single-step time-marching algorithms. P.J. Leonard and D. Rodger A p159
Whitney forms: a class of finite elements for three-dimensional computations in electromagnetism. A. Bossavit A p493

EDUCATION AND TRAINING

An educational perspective on in-circuit testing. D.A. Beaujean and S.B. Morgan A p233
Are we in control?. B.V. Jayawant D p1
Digital-pulse approach to electromagnetism. C.J. Carpenter A p477
Electromagnetism and semantics. Capt. J.C.G. Field A p523
Engineering education and the school system. J.F. Gamlin A p271
Engineering ideology. K. Strauss A p261
Preparation for careers in engineering and science. Sir H. Bondi A p227
The engineer in society (Editorial). J.C. Endersby A p245
The role of the IEE in the advancement of technical education in Britain up to 1924. J.O. Marsh A p266
Uses and abuses of technology. K.J. O'Connell A p286
Workshop teaching: an experiment in engineering education. R.G. Kelly A p113

EDUCATIONAL PROJECTS

An educational perspective on in-circuit testing. D.A. Beaujean and S.B. Morgan A p233
Electrical drive simulator for teaching purposes. J.R. Smith and A.J. Tait A p29
Engineering education and the school system. J.F. Gamlin A p271
Preparation for careers in engineering and science. Sir H. Bondi A p227

ELECTRICAL MACHINES

Airgap permeance of vernier-type, doubly-slotted magnetic structures. G. Qishan, E. Andresen and G. Chun B p17
Computer-aided design of PWM power-electronic variable-speed drives. S.R. Bowes and J.C. Clare B p240
Coupling of discharge currents between conductors of electrical machines owing to laminated steel core. P.J. Tavner and R.J. Jackson B p295
Flat-top windows for PWM waveform processing via DFT. Luigi Salvatore and Amerigo Trotta B p346
New dynamic inductance concept and its application to synchronous machine modelling. C.D. Manning and Mohamed A. Abdel Halim B p231
Wide-range power system pole placer. H.M. Soliman and M.M.F. Sakr C p195

ELECTROMAGNETIC THEORY

Airgap permeance of vernier-type, doubly-slotted magnetic structures. G. Qishan, E. Andresen and G. Chun B p17
Analysis of a perpendicular-type eddy-current speed meter. N. Takehira and A. Tanaka A p89
Application of layer theory to transient electromagnetic problems in linear media. M.C. Begg, A.G. Armstrong and J. Toyer A p188
Calculation of self and mutual impedances for coils on ferromagnetic cores. D.J. Wilcox, M. Conlon and W.G. Hurley A p470
Closed-form approximation to the bounded part of the exact kernel of a cylindrical antenna integral equation. A. Karwowski H p210
Comparison of different boundary integral formulations when coupled with finite elements in three dimensions. Z. Ren, F. Bouillault, A. Razek and J.C. Verite A p501
Complementary solutions of linear and nonlinear magnetostatic problems. J. Rikabi, C.F. Bryant and E.M. Freeman A p433
Computation of fields due to current sources. J. Penman, M.D. Grieve and G. Ellis A p515
Computer package for calculating electric and magnetic fields exploiting dual energy bounds. J.K. Sykulski A p145
Coupling of discharge currents between conductors of electrical machines owing to laminated steel core. P.J. Tavner and R.J. Jackson B p295
Current pulses in switched reluctance motor. P.H. Chappell B p224
Design of integrated optical circuits using finite elements. T.P. Young A p135
Digital-pulse approach to electromagnetism. C.J. Carpenter A p477
Dual energy methods in electromagnetism using tubes and slices. P. Hammond and D. Baldomir A p167
Electromagnetic shielding in a system of two slabs. S.M. Panas and E.E. Kriezis A p451
Electromagnetism and semantics. Capt. J.C.G. Field A p523
Finite element method for 3D eddy current flow in thin conducting sheets. D. Rodger and N. Atkinson A p369
Foucault currents in a conducting sphere moving with constant velocity. J. Van Bladel A p463
How the electrical properties of soil affect the surge performance of buried long systems. F. Lattarulo A p51
Influence of rotor currents on end-winding forces in cage motor. S. Williamson and M.R.E. Ellis B p371
Integral formulation for 3D eddy-current computation using edge elements. R. Albanese and G. Rubinacci A p457
Magnetostatic problems in multiply connected regions: some properties of the curl operator. A. Bossavit A p179
Methods for the solution of open-boundary electromagnetic-field problems. C.R.I. Emson A p151
Motion of a conducting loop in a magnetic field. J.G. Van Bladel A p217
On certain properties of the electric vector potential in eddy-current problems. Part 2. M.R. Krakowski A e432
Optimal designs for multilayer air-cored toroidal inductors with circular windows. P.N. Murgatroyd B p202
Poynting vector probe for measuring power at extremely low power factor. W.Z. Fam A p385
Scattering of a long dipole field by parallel cylindrical scatterers. H.A. Ragheb and M. Hamid H p118
Some aspects of two- and three-dimensional transient-eddy-current modelling using finite elements and single-step time-marching algorithms. P.J. Leonard and D. Rodger A p159
Suboptimum adaptive polarisation cancellers for dual-polarisation radars. M. Gherardelli, D. Giuli and M. Fossi F p60
Symmetry of electromagnetism. S.E. Harris A p363
Synthesis of electrodes for axisymmetric systems. C.J. Edgcombe A p125
TM scattering from a conducting cylinder of arbitrary cross-section covered by multiple layers of lossy dielectrics. E. Arvas, M. Ross and Y. Qian H p226
Two-dimensional field computation using boundary integral equations method for stationary and quasistationary problems with external current sources. E. Basso-Ndjock and C. Broche A p173
Whitney forms: a class of finite elements for three-dimensional computations in electromagnetism. A. Bossavit A p493

ELECTRON DEVICES

Hot electron device monitoring and characterisation: a review. J.J. Sanchez, K. Hsueh and T.A. DeMassa I p113
Large-signal field analysis of an O-type travelling wave amplifier. Part 3: Three-dimensional electron motion. N. Kalyanasundaram and R. Chinnadurai I p59
Synthesis of electrodes for axisymmetric systems. C.J. Edgcombe A p125

ELECTRONIC CIRCUITS

Resonance frequencies and behaviour of the impatt cap oscillator. J.R.G. Twisleton H p196
Silicon flow sensors. B.W. van Oudheusden D p373

ELECTRONIC WARFARE

Analysis of coloured filter controllers for bank-to-turn CLOS guidance. G.W. Irwin and R.J. Fleming D p486
Implications of military engineering. T.D.N. Williams A p303
Performance of the greater-of and censored greater-of detectors in multiple target environments. Emad K. Al-Hussaini F p193
The effect of the defence sector on the UK electronics industry. P.E. Trier, P. Gummett, J. Richards and A. Wallard A p419

ENERGY CONVERSION AND STORAGE

Entropy: Murphy was right. G. Weissmann A p123

ENGINEERING ADMINISTRATION AND MANAGEMENT

Cost/benefit approach to establish optimum adequacy level for generating system planning. R. Billinton and J. Oteng-Adjei C p81
Engineering education and the school system. J.F. Gamlin A p271
Engineers and management. H. Beck A p390
Higher education, industry and Government — new rules for a *ménage à trois*. E.A. Ash A p1
Implications of military engineering. T.D.N. Williams A p303
Managing a business in the public sector. D.G. Jefferies A p13
Polyhedral dynamics applied to design and project management. B. Bolton A p241
Preparation for careers in engineering and science. Sir H. Bondi A p227
Research co-operatives: experiences with a small-scale approach. D.P. Burton and T. Coffey A p539
Successful management simulation for young engineers. N.J. Burton and P.M. Weitzel A p110
Systems creativity. D.K. Hitchins A p407
Systems theory and systems engineering. L. Finkelstein, F. Land, E.R. Carson and J.H. Westcott A p401
Technology and engineering design: shaping a better future or repeating the mistakes of the past?. P.T. Kidd A p297
Technology and the human factor. D.A. Bell A p309
The effect of the defence sector on the UK electronics industry. P.E. Trier, P. Gummett, J. Richards and A. Wallard A p419
The engineer in society (Editorial). J.C. Endersby A p245
The engineer in society. D. Lidgate A p247
The enigma of the engineer. Hero of the industrial revolution: mere henchman in an age of science. O.H. Critchley A p253

The role of the IEE in the advancement of technical education in Britain up to 1924. J.O. Marsh A p266
Third World electrification. H.W. Whittington A p277
Uses and abuses of technology. K.J. O'Connell A p286

ENGINEERING AND SOCIETY

Engineering education and the school system. J.F. Gamlin A p271
Engineering ideology. K. Strauss A p261
Entropy: Murphy was right. G. Weissmann A p123
Implications of military engineering. T.D.N. Williams A p303
Perception, reality and values: science, conditioning and evidence. A.J. Ellison A p319
Preparation for careers in engineering and science. Sir H. Bondi A p227
Social benefits of electricity. B. Bowers A p291
Technology and engineering design: shaping a better future or repeating the mistakes of the past?. P.T. Kidd A p297
Technology and the human factor. D.A. Bell A p309
The engineer in society (Editorial). J.C. Endersby A p245
The engineer in society. D. Lidgate A p247
The enigma of the engineer. Hero of the industrial revolution: mere henchman in an age of science. O.H. Critchley A p253
The role of the IEE in the advancement of technical education in Britain up to 1924. J.O. Marsh A p266
Third World electrification. H.W. Whittington A p277
Unemployment: technological causes, cures and consequences. C.F. George A p313
Uses and abuses of technology. K.J. O'Connell A p286

ERRORS AND ERROR ANALYSIS

Adaptive frame synchroniser for digital satellite communication systems. L.-K. Shark, T.J. Terrell and R.J. Simpson F p51
Algorithm for adaptive error control system synthesis. B. Vučetić, D. Drajić and D. Perišić F p85
Asymptotic behaviour of bit error rate for bandpass direct-sequence spread-spectrum modulation systems. L. Alcuri, G. Mamola and E. Randazzo F p487
Embedded coding technique: principles and theoretical studies. M. Darnell, B.K. Honary and F. Zolghadr F p43
Error probability of offset differential phase shift keying with intersymbol and adjacent channel interference. I. Korn F p175
Number theoretic transforms of periodic structures and their applications. S. Boussakta, A.Y.Md. Shakaff, F. Marir and A.G.J. Holt G p83

FAULT DETECTION

Co-operative research into the engineering and design of a new digital directional comparison scheme. A.T. Johns and E.P. Walker C p334
Design of a digital protection scheme for power transformers using optimal state observers. Y.V.V.S. Murty, W.J. Smolinski and S. Sivakumar C p224
Exhaustive testing of stuck-open faults in CMOS combinational circuits. J.A. Bate and D.M. Miller E p10
Physical faults in MOS circuits and their coverage by different fault models. N. Burgess, R.I. Damper, K.A. Totton and S.J. Shaw E p1
Scheme, based on travelling-waves, for the protection of major transmission lines. C. Christopoulos, D.W.P. Thomas and A. Wright C p63
Testing of random access memories: theory and practice. P.K. Veenstra, F.P.M. Beenker and J.J.M. Koomen G p24

FAULT LOCATION

Fault diagnosis in combinational digital circuits using a backtrack algorithm to generate fault location hypotheses. S.J. Sangwine G p247
Leak detection and location in gas pipelines. A. Benkherouf and A.Y. Allidina D p142
New algorithm for distance protection of high voltage transmission lines. M. Fikri and M.A.H. El-Sayed C p436
Systematic design strategy for concurrent error diagnosable iterative logic arrays. S.-W. Chan, S.S. Leung and C.-L. Wey E p87

FEEDBACK

Eigenstructure assignment by output feedback in descriptor systems. L.R. Fletcher D p302
Exact model-matching control of linear discrete-time systems by periodic state or output feedback. T.G. Pimenides D p426
Synthesis of control laws with specified gain and phase margin and poles region. T.-T. Lee and S.-H. Lee D p474
Time-domain robustness and performance optimisation of linear quadratic control problems. R.I. Badr, M.F. Hassan, J. Bernussou and A.Y. Bilal D p223

FERRITES AND FERROMAGNETICS

E-plane finline circulator using coupled H-plane turnstile resonators. J. Helszajn, G. McDonald and D. Sutherland H p279

FERROMAGNETICS

Calculation of self and mutual impedances for coils on ferromagnetic cores. D.J. Wilcox, M. Conlon and W.G. Hurley A p470

FIBRES, OPTICAL

Review of rare earth doped fibre lasers and amplifiers. P. Urquhart J p385

FIELD-EFFECT TRANSISTORS

Analysis of an FET amplifier using power-dependent *S*-parameters. H. Umeda and M. Nakajima G p162

FILTERS AND FILTERING

Analysis of coloured filter controllers for bank-to-turn CLOS guidance. G.W. Irwin and R.J. Fleming D p486
Analytical redundancy using band-limiting filters. J.G. Jones and M.J. Corbin D p257
Connection between continuous and discrete Riccati equations with applications to Kalman filtering. M. Salgado, R. Middleton and G.C. Goodwin D p28
Design of N-dimensional multiplierless spherically symmetric FIR digital filters by transformation. C. Charalambous G p203
Design of minimum phase FIR digital filters. N.N. Chit and J.S. Mason G p258
Error probability of offset differential phase shift keying with intersymbol and adjacent channel interference. I. Korn F p175
Filter realisation by passive network simulation. Li Ping and J.I. Sewell G p167
Filtered laser beat-frequency fluctuations. I. Garrett, G. Jacobsen and R.J.S. Pedersen J p408
Minimax design of 2D FIR linear phase digital filters. C. Charalambous and H. Khreishi G p194
Optimised design of even-order optical low-pass and high-pass multilayer filters by method of coefficient matching. T.C. Chen J p359
Optimised design of odd-order optical lowpass and highpass multilayer filters by method of coefficient matching. T.C. Chen J p166
Reconfigurable programmable architecture for cascaded unit elements and lattice WDFs. P.S. Matharu and S.S. Lawson G p181
State estimation of manoeuvring targets from noisy radar measurements. K.V. Ramachandra F p82

FINANCIAL MANAGEMENT

Higher education, industry and Government — new rules for a *ménage à trois*. E.A. Ash A p1
Optimal consumer response for electricity spot pricing. A.K. David C p378

GENERATORS

Comparison of transient performance of superconducting and conventional generators in a multimachine system. S.M. Osheba, M.A.A.S. Alyan and Y.H.A. Rahim C p389
Design-based computational procedure for performance prediction and analysis of self-excited induction generators using motor design packages. S.S. Murthy, H.S. Nagaraj and Annie Kuriyan B p8
Excitation balancing of a self-excited induction generator for maximum power output. J.L. Bhattacharya and J.L. Woodward C p88
Modelling, analysis and control of a wind-turbine driven self-excited induction generator. Y. Üçtuğ and M. Demirekler C p268
Photovoltaic power generators for radio communication systems in Jordan. H.M. El-Zayyat and M. Mahmoud C p385
Robust self-tuning regulator for a synchronous generator. Q.H. Wu and B.W. Hogg D p463

HAZARDS

Diagnostic measurements at UHF in gas insulated substations. B.F. Hampton and R.J. Meats C p137
Leak detection and location in gas pipelines. A. Benkherouf and A.Y. Allidina D p142
Multiple single-chip microcomputer approach to fire detection and monitoring system. A.J. Al-Khalili, D. Al-Khalili and M.S. Khassem G p1
Thermal analysis of a multicore cable. D.S. Thompson and M.R. Wilson C p79

HISTORY

History of the electrical units and early standards. A.C. Lynch A d88
Social benefits of electricity. B. Bowers A p291
The St. Andrews 1863 British Association Ohm. J.F. Allen and E.M. Wray A p88
The enigma of the engineer. Hero of the industrial revolution: mere henchman in an age of science. O.H. Critchley A p253
The role of the IEE in the advancement of technical education in Britain up to 1924. J.O. Marsh A p266

HOLOGRAPHY

Limitations in microwave holographic synthetic aperture imaging over a lossy half-space. G. Junkin and A.P. Anderson F p321

HYDROELECTRIC POWER GENERATION

Optimal operational planning for a hydro-electric generation system. D. Lidgate and B.H. Amir C p169
Simulation model for optimising energy allocation to hydro-electric and thermal plants in a mixed thermal/hydro-electric power system. U. Navon, I. Zur and D. Weiner C p182

IMAGE PROCESSING

Application of the generalised Hough transform to corner detection. E.R. Davies E p49
Effect of channel errors on source coded image data and the provision of adequate protection of transmission bits. R.L. Brewster and T.E. Dodgson F p528
Image processing for electronic document storage. A. Cooper, W. Kahari and R. Such E p196
Lossless progressive image transmission by residual error vector quantiation. L. Wang and M. Goldberg F p421 F e576
Lossless progressive image transmission by residual error vector quantisation. L. Wang and M. Goldberg F e576
Number theoretic transforms of periodic structures and their applications. S. Boussakta, A.Y.Md. Shakaff, F. Marir and A.G.J. Holt G p83
Performance data and limiting conditions of object tracking algorithms in the presence of camera noise. H. Siebert and W. Engelhardt F p111
Practical implementations of block-mode image filters using the Fermat number transform on a microprocessor-based system. A.Y.Md. Shakaff, A. Pajayakrit and A.G.J. Holt G p141
Processor system for realtime video signal processing. W. Liebsch and D. Zier E p181
Scale based algorithm for recognition of blurred planar objects. D.T. Nguyen and Ding-Yi Xu E p307
Segmented-image coding: performance comparison with the discrete cosine transform. M.J. Biggar, O.J. Morris and A.G. Constantinides F p121

INDUCTION MOTORS

A novel current sensor for PWM AC drives. J.T. Boys B p27
Control of compensation in linear induction motors. A. Shanmugasundaram and M. Rangasamy B p22

Design-based computational procedure for performance prediction and analysis of self-excited induction generators using motor design packages. S.S. Murthy, H.S. Nagaraj and Annie Kuriyan B p8
Influence of rotor currents on end-winding forces in cage motor. S. Williamson and M.R.E. Ellis B p371
Modelling of inverter-controlled asynchronous drives for system simulation in DC railways. Z.S. Mouneimne and B. Mellitt B p210
New approach to field orientation control of a CSI induction motor drive. Jie Zhang, V. Thiagarajan, T. Grant and T.H. Barton B p1
New dynamic inductance concept and its application to synchronous machine modelling. C.D. Manning and Mohamed A. Abdel Halim B p231
New improved modulation method for a cycloconvertor driving an induction motor. G.P. Hunter and V.S. Ramsden B p324
Operating cost optimisation of speed-changing induction motors. N. Ammasai Gounden, M. Subbiah and M.R. Krishnamurthy B p33
Simplified configuration of GTO current source inverter for induction motor drives. R. Itoh B p218
Spectral response of nonlinear magnetic conductors. Muhammad Taher Abuelma'atti B p102

INDUSTRIAL APPLICATIONS OF POWER

Flat-top windows for PWM waveform processing via DFT. Luigi Salvatore and Amerigo Trotta B p346

INFORMATION AND COMMUNICATION THEORY

CMOS ternary flip-flops and their applications. F. Prosser, X. Wu and X. Chen E p266 E e340
Economic approach to fault-tolerant synchronisation. A.H. Infis and W.R. Moore E p82

INSTRUMENTATION AND MEASURING SCIENCE

Active network for correcting impulse-voltage measurements. X. Liang and G.O. Martens A p487
Automotive transducers: an overview. M.H. Westbrook D p339
Development of a rotating-shaft torque sensor for automotive applications. J.D. Turner D p334
Electrical drive simulator for teaching purposes. J.R. Smith and A.J. Tait A p29
Logarithmic and exponential switched-capacitor convertors and some of their applications. A. Cichocki and R. Unbehauen G p58
Miniature silicon resonant pressure sensor. J.C. Greenwood and D.W. Satchell D p369
New lightning flash counter and calibration circuit with improved discrimination of cloud and ground discharges. E. O. Oladiran, E. Pisler and S. Israelsson A p22
Sensor applications of thick-film technology. Prof. J.E. Brignell, N.M. White and A.W.J. Cranny I p77

INSULATORS AND INSULATION

Impulse flashover along the outer surface of a cylindrical dielectric solid with a gas layer inside. M. Ohki and S. Saito A p99 A e447
New monitor for pollution on power line insulators Part 2: Simulated field tests. M. Khalifa, A. El-Morshedy, O.E. Gouda and S.E.-D. Habib C p24

INTEGRATED CIRCUITS

CMOS mobility degradation coefficients at low temperatures. S.A. Campbell and P. Andersen I p17
Digital synchronisation of switching transistors. D.W. Auckland, R. Shuttleworth and T.W. Wong B p97
Discretionary channel routing using score function. K.-P. Tan and T.-S. Tan I p49
Dynamic capacitance effects in DRAM word lines. W.H. Henkels I p1
Exhaustive testing of stuck-open faults in CMOS combinational circuits. J.A. Bate and D.M. Miller E p10
Influence of gallium in a metallisation on GaAs. R.P. Gupta, J. Wuerfl, H.L. Hartnagel and W.S. Khokle I p25
Integrable electronically tunable current conveyors. W. Surakampontorn and P. Thitimajshima G p71
Logarithmic and exponential switched-capacitor convertors and some of their applications. A. Cichocki and R. Unbehauen G p58
Optical annealing of ohmic contacts for GaAs high-speed integrated circuits using a zirconium diboride barrier layer. J. Herniman, D.A. Allan and P.J. O'Sullivan I p67
Self-test: the solution to the VLSI test problem?. K. Totton and S. Shaw E p190
Sensor applications of thick-film technology. Prof. J.E. Brignell, N.M. White and A.W.J. Cranny I p77
Superchip architecture for implementing large integrated systems. W. Chen, J. Mavor, P.B. Denyer and D. Renshaw E p137
Symple: a symbolic layout tool for bipolar and MOS VLSI. K.S.B. Szabó, J.M. Leask and M.I. Elmasry I p29
Transit times in the high-density interconnections on GaAs-based VHSIC. A.K. Goel I p129
VLSI design for diminished-1 multiplication of integers modulo a Fermat number. M. Benaissa, A. Pajayakrit, S.S. Dlay and A.G.J. Holt E p161
Wafer scale integration. J.B. Butcher and K.K. Johnstone E p281

INTEGRATED OPTICS

Beam propagation method and geometrical optics. J.J. Gribble and J.M. Arnold J p343
Crosspolarisation coupling in curved dielectric rib waveguides. C. Yeung, T. Rozzi and G. Cerri J p281
Design of integrated optical circuits using finite elements. T.P. Young A p135
GaAs monolithic integrated photoreceiver for 0.8 μm wavelength: association of Schottky photodiode and FET. H. Verriele, J.L. Lorriaux, P. Legry, J.P. Gouy, J.P. Vilcot and D. Decoster J p92
Microwave simulation of optoelectronic bending loss in presence of dielectric discontinuity. T.M. Benson, P.C. Kendall and M.S. Stern J p325

INTERFERENCE

Cochannel interference between point-to-point urban microwave radio systems. W.S. Davies and D. Wende F p225
Inductive interference effects in the Hong Kong Island Line signalling system. B. Mellitt, F.W. Harris, B. Guieu and N.R. Harris B p41
Outage probability calculations for multiple cochannel interferers in cellular mobile radio systems. K.W. Sowerby and A.G. Williamson F p208
Ripple control interference at irrigation installations. P.S. Bodger and T.B. Norriss C p503

INVERTERS

A novel current sensor for PWM AC drives. J.T. Boys B p27
Analysis of conventional snubber circuits for PWM inverters using bipolar transistors. P.D. Evans and L.K. Mestha B p180
DC-to-utility interface using sinewave resonant inverter. A.K.S. Bhat and S.B. Dewan B p193
Flat-top windows for PWM waveform processing via DFT. Luigi Salvatore and Amerigo Trotta B p346
Modelling of inverter-controlled asynchronous drives for system simulation in DC railways. Z.S. Mouneimne and B. Mellitt B p210
New current control scheme for PWM inverters. P. Enjeti, J.F. Lindsay, P.D. Ziogas and M.H. Rashid B p172
Optimal PWM microprocessor-controlled current-source inverter drives. S.R. Bowes and R.I. Bullough B p59
Scalar control: an alternative AC drive philosophy. J.T. Boys and S.J. Walton B p151
Simplified configuration of GTO current source inverter for induction motor drives. R. Itoh B p218

IONISATION

'Local' conditioning of broad-area vacuum-insulated high-voltage electrodes. R.V. Latham and T.J. Fielding A p508
A photon-triggered spark gap. N.L. Allen, S. Bower and D.J. Mellor A p56
Electrostatic precipitators. K.J. McLean A p347
Surface recombination of ions and cratering by ion impact. K.G. Emeleus and J.R.M. Coulter A p76

LASERS

Bistability in inhomogeneously pumped quantum well laser diodes. A.I. Kucharska, P. Blood, E.D. Fletcher and P.J. Hulyer J p31
Design of narrow-linewidth phase-shifted distributed feedback lasers. P. Correc J p64
Directional coupling snd bistability in four contact twin-stripe injection lasers. I.H. White, R.S. Linton and Professor J.E. Carroll J p25
Effective photoconductivity and plasma depth in optically quasi-CW controlled microwave switching devices. W. Platte J p251
Explicit approximations for the linewidth-enhancement factor in quantum-well lasers. L.D. Westbrook and M.J. Adams J p223
Fibre laser with adjustable fibre reflector for wavelength tuning and variable output coupling. C.A. Millar, I.D. Miller, D.B. Mortimore, B.J. Ainslie and P. Urquhart J p303
In-phase and quadrature detection using 90° optical hybrid receiver: experiments and design considerations. T.G. Hodgkinson, R.A. Harmon, D.W. Smith and P.J. Chidgey J p260
Metal-clad ridge waveguide laser modes. S.J. Al-Bader and H.A. Jamid J p79
Model for multimode picosecond dynamic laser chirp based on transmission line laser model. A.J. Lowery J p126 J p297
Optical tristability and associated ternary digital functions using a twin-stripe laser diode. M. Watanabe, S. Mukai, H. Itoh and H. Yajima J p74
Review of rare earth doped fibre lasers and amplifiers. P. Urquhart J p385
Threshold current of ridge waveguide laser in gain and index regimes including end facet reflectivity. G.P. Bava, P.L. Debernardi, I. Montrosset and M. Scrivanti J p159
Waveguiding analysis of mushroom stripe laser diodes. M.-C. Amann J p68
Waveguiding and temperature characteristics of threshold current and amplitude-phase coupling coefficient in double-heterostructure lasers. A.P. Bogatov J p226

LIGHTING

Glass and its history of service. H. Rawson A p325

LIGHTNING AND LIGHTNING PROTECTION

Alternative solution for the Chowdhuri–Gross model of lightning-induced voltages on power lines. M.K. Haldar and A.C. Liew C p324
New lightning flash counter and calibration circuit with improved discrimination of cloud and ground discharges. E. O. Oladiran, E. Pisler and S. Israelsson A p22

LINEAR MOTORS

Characteristics and optimal design of variable airgap linear force motors. M.C. Leu, E.V. Scorza and D.L. Bartel B p341
Control of compensation in linear induction motors. A. Shanmugasundaram and M. Rangasamy B p22
Review of recent progress in linear motors. G.W. McLean B p380

LINEAR NETWORKS

Computation of time response for linear networks: a novel approach. J.C. Mandojana and A. Ambardar G p155

LOAD AND VOLTAGE REGULATION

Cost/benefit approach to establish optimum adequacy level for generating system planning. R. Billinton and J. Oteng-Adjei C p81
Excitation balancing of a self-excited induction generator for maximum power output. J.L. Bhattacharya and J.L. Woodward C p88
Optimal operational planning for a hydro-electric generation system. D. Lidgate and B.H. Amir C p169
Phase-locked oscillator control system for thyristor-controlled reactors. J.D. Ainsworth C p146
Poynting vector probe for measuring power at extremely low power factor. W.Z. Fam A p385
Realistic power system security algorithm. A. Mohamed and G.B. Jasmon C p98
Wide-range power system pole placer. H.M. Soliman and M.M.F. Sakr C p195

LOGIC

CMOS ternary flip-flops and their applications. F. Prosser, X. Wu and X. Chen E p266 E e340

Heuristic algorithm for the minimisation of generalised Boolean functions. G. Caruso E p108
Low power dynamic ternary logic. J.-S. Wang, C.-Y. Wu and M.-K. Tsai G p221
Timing macromodels for CMOS static set/reset latches and their applications. C.-Y. Wu, C. Li and J.S. Hwang E p151

LONG-TERM PLANNING

British system operation experience. A. Myles C p233
Cost/benefit approach to establish optimum adequacy level for generating system planning. R. Billinton and J. Oteng-Adjei C p81
Generation expansion planning: an expert system approach. S.A. Farghal, M.S. Kandil and M.R. Abdel-Aziz C p261
Parallel processor algorithm for power system simulation. M. Rafian, M.J.H. Sterling and M.R. Irving C p285

MAGNETIC DEVICES AND PROPERTIES

Digital simulation of *B/H* excursions for power system studies. S. Ray C p202
Magnetostatic problems in multiply connected regions: some properties of the curl operator. A. Bossavit A p179
Spectral response of nonlinear magnetic conductors. Muhammad Taher Abuelma'atti B p102

MAGNETIC FIELDS

Airgap permeance of vernier-type, doubly-slotted magnetic structures. G. Qishan, E. Andresen and G. Chun B p17
Application of layer theory to transient electromagnetic problems in linear media. M.C. Begg, A.G. Armstrong and J. Toyer A p188
Complementary solutions of linear and nonlinear magnetostatic problems. J. Rikabi, C.F. Bryant and E.M. Freeman A p433
Computation of fields due to current sources. J. Penman, M.D. Grieve and G. Ellis A p515
Computer package for calculating electric and magnetic fields exploiting dual energy bounds. J.K. Sykulski A p145
Digital-pulse approach to electromagnetism. C.J. Carpenter A p477
Dual energy methods in electromagnetism using tubes and slices. P. Hammond and D. Baldomir A p167
Finite element method for 3D eddy current flow in thin conducting sheets. D. Rodger and N. Atkinson A p369
Flux penetration and losses in steel plate with nonsinusoidal magnetisation. D. O'Kelly A p193
Losses and flux penetration in non-grain-oriented low-loss steel with non-sinusoidal excitation. D. O'Kelly A p199
Magnetostatic problems in multiply connected regions: some properties of the curl operator. A. Bossavit A p179
Methods for the solution of open-boundary electromagnetic-field problems. C.R.I. Emson A p151
Motion of a conducting loop in a magnetic field. J.G. Van Bladel A p217
Symmetry of electromagnetism. S.E. Harris A p363
Two-dimensional field computation using boundary integral equations method for stationary and quasistationary problems with external current sources. E. Basso-Ndjock and C. Broche A p173

MANAGEMENT

Engineers and management. H. Beck A p390
Managing a business in the public sector. D.G. Jefferies A p13
Power projects: the role of the contractor. K.M. Odell C p1
Research co-operatives: experiences with a small-scale approach. D.P. Burton and T. Coffey A p539
Successful management simulation for young engineers. N.J. Burton and P.M. Weitzel A p110
Systems creativity. D.K. Hitchins A p407
Systems theory and systems engineering. L. Finkelstein, F. Land, E.R. Carson and J.H. Westcott A p401
The effect of the defence sector on the UK electronics industry. P.E. Trier, P. Gummett, J. Richards and A. Wallard A p419

MANUFACTURING

Influence of the preoxidation cleaning on the electrical properties of thin SiO_2 layers. J.L. Prom, J. Castagne, G. Sarrabayrouse and A. Munoz-Yague I p20

MATHEMATICAL TECHNIQUES

3-phase voltage sourced reversible rectifier. A.W. Green, J.T. Boys and G.F. Gates B p362
Admittance of a longitudinal slot in a ridge waveguide. K. Falk H p263
Algorithm for design centering based on use of sensitivity information. N.G. Maratos G p11
Ammeter induced perturbations of Argand diagrams for Debye-like dielectrics. R. Ongaro, A. Pillonnet and P. Desgoutte A p41
Analysis of singular systems using orthogonal functions. B.G. Mertzios, F.L. Lewis and G. Vachtsevanos D p323
Analysis of time-varying singular systems via single-term Walsh-series approach. K.R. Palanisamy and K. Balachandran D p461
Application of finite-element method to arbitrarily shaped discontinuities in a dielectric slab waveguide. M. Koshiba and K. Hirayama H p8
Application of layer theory to transient electromagnetic problems in linear media. M.C. Begg, A.G. Armstrong and J. Toyer A p188
Application of spherical wave expansions to direct GO far field synthesis. M.J. Mehler H p41
Array synthesis with excitation constraints. G. Franceschetti, G. Mazzarella and G. Panariello H p400
Beam propagation method applied to a step discontinuity in dielectric planar waveguides. L.R. Gomaa H p205
Calculation of the discrete Hartley transform via the Fermat number transform using a VLSI chip. S. Boussakta and A.G.J. Holt G p101
Calculation of the driving-point impedance of a two-terminal network by the dual variational method. E. Moreno and C. Rey G p97
Characteristic polynomial assignment in 2-dimensional discrete systems. P. Agathoklis and S. Foda D p253
Comparison of different boundary integral formulations when coupled with finite elements in three dimensions. Z. Ren, F. Bouillault, A. Razek and J.C. Verite A p501
Complementary solutions of linear and nonlinear magnetostatic problems. J. Rikabi, C.F. Bryant and E.M. Freeman A p433
Computation of fields due to current sources. J. Penman, M.D. Grieve and G. Ellis A p515
Computation of large signal GaAs Impatt diode parameters from closed form analytical solution. S.R. Shukla, Prem Swarup and M.N. Sen I p13
Computer package for calculating electric and magnetic fields exploiting dual energy bounds. J.K. Sykulski A p145
Connection between continuous and discrete Riccati equations with applications to Kalman filtering. M. Salgado, R. Middleton and G.C. Goodwin D p28
Correlation properties of dual-BCH, Kasami and other sequences for spread-spectrum, multiple-access systems. C.S. Goswami and M. Beale F p114
Current pulses in switched reluctance motor. P.H. Chappell B p224
Determination of weighting polynomials in generalised minimum variance controllers. R.S. Mendes, W.C. Amaral and L.G. Latre D p21
Diakoptic mesh analysis of limited size power supply systems. K. Gregory, J.G. Kettleborough and I.R. Smith C p124
Digital-pulse approach to electromagnetism. C.J. Carpenter A p477
Diminished-1 multiplier for a fast convolver and correlator using the Fermat number transform. S.S. Diay, M. Benaissa, A. Bouridane and A.G.J. Holt G p187
Dual energy methods in electromagnetism using tubes and slices. P. Hammond and D. Baldomir A p167
Dynamic modelling for retaining selected portions of interconnected power networks. M. Brucoli, M. La Scala, N. Pitrone and M. Trovato C p118
Eigenvalues of propagating waves in a circular waveguide with an impedance wall. A.Z. Elsherbeni, J. Stanier and M. Hamid H p23
Electromagnetic shielding in a system of two slabs. S.M. Panas and E.E. Kriezis A p451
Factored state-space realisation of two-dimensional systems. K. Benmahammed D p421
Fast multidimensional discrete Hartley transform using Fermat number transform. S. Boussakta and A.G.J. Holt G p253
Field theory analysis of multiport-multidiscontinuity structures: application to short-circuited *E*-plane septum. J.M. Rebollar and J.A. Encinar H p1
Frequency-response method for linear multivariable systems simplification. S.K. Wing and H. Nicholson D p381
Generalised predictive control with input constraints. T.T.C. Tsang and D.W. Clarke D p451
Goal-oriented subgraph isomorphism technique for IC device recognition. A.D. Brown and P.R. Thomas I p141
Heuristic algorithm for the minimisation of generalised Boolean functions. G. Caruso E p108
Identification of optimum site for power system stabiliser applications. D.R. Ostojic C p416
Integral formulation for 3D eddy-current computation using edge elements. R. Albanese and G. Rubinacci A p457
Knowledge-based project control employing heuristic optimisation. T.J. Barber and J.T. Boardman A p529
Kummer and Tricomi functions for analysis of circular gyrotropic waveguides with azimuthal magnetisation. K.P. Ivanov and G.N. Georgiev H p125
Linear system reduction using approximate moment matching. A.M. Davidson and I.R. Walters D p73
Magnetostatic problems in multiply connected regions: some properties of the curl operator. A. Bossavit A p179
Methods for the solution of open-boundary electromagnetic-field problems. C.R.I. Emson A p151
Network parameter estimation using online data with application to transformer tap position estimation. Th. Van Cutsem and V.H. Quintana C p31
New class of double inductive binary error correcting codes based on the class of Reed–Muller codes. D. Kabilafkas and L.F. Turner F p507
Number theoretic transforms of periodic structures and their applications. S. Boussakta, A.Y.Md. Shakaff, F. Marir and A.G.J. Holt G p83
Optimised design of odd-order optical lowpass and highpass multilayer filters by method of coefficient matching. T.C. Chen J p166
Outage probability calculations for multiple cochannel interferers in cellular mobile radio systems. K.W. Sowerby and A.G. Williamson F p208
Power system steady state stability assessment using catastrophe theory. A.A. Sallam C p189
Practical implementations of block-mode image filters using the Fermat number transform on a microprocessor-based system. A.Y.Md. Shakaff, A. Pajayakrit and A.G.J. Holt G p141
Prediction of RFI demodulation in bipolar operational amplifiers. M.T. Abuelma'atti G p29
Questions of controllability and observability for nonuniformly sampled discrete systems. A. Fuster and J.M. Guillen D p248
Real-time analytic sensitivity method for transient security assessment and preventive control. Y. Xue, Th. Van Cutsem and M. Ribbens-Pavella C p107
Representation of transformer magnetising characteristic by the extended logistic model. E.H. Barakat and L.N. Abdul-Aal C p144
Robust pole-placement algorithm for adaptive control. C.S. Berger D p493
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh and R.E. Yates D e181
Sequential design of linear quadratic state regulators via the optimal root-locus techniques. L.S. Shieh, H.M. Dib and R.E. Yates D p289
Some aspects of two- and three-dimensional transient-eddy-current modelling using finite elements and single-step time-marching algorithms. P.J. Leonard and D. Rodger A p159
Spherical wave expansions for shaped beam synthesis. M.J. Mehler H p327
Stable linear system reduction via a multipoint squared-magnitude continued-fraction expansion. C. Hwang and M.-Y. Chen D p441
Statistical analysis of nonlinear optical amplifier in high saturation. S. Ruiz-Moreno, G. Junyent, M.J. Soneira and J.R. Usandizaga J p34
Stochastic time-optimal control problems. W. Zhang and D. Elliott D p395
Symmetry of electromagnetism. S.E. Harris A p363
Synthesis of electrodes for axisymmetric systems. C.J. Edgcombe A p125
Systolic architecture for matrix triangularisation with partial pivoting. H. Barada and A. El-Amawy E p208
Systolic array for the quotient difference algorithm. D.J. Evans and G.M. Megson E p60
TM scattering from a conducting cylinder of arbitrary cross-section covered by multiple layers of lossy dielectrics. E. Arvas, M. Ross and Y. Qian H p226
Transfer function parameters in multipath channel modelling. T. Raji F p262
Two-dimensional field computation using boundary integral equations method for stationary and quasistationary problems with external current sources. E. Basso-Ndjock and C. Broche A p173
Weighted moving identification and control for multivariable systems. W.-T. Wu, Y.T. Chu and K.-C. Chen D p196
Whitney forms: a class of finite elements for three-dimensional computations in electromagnetism. A. Bossavit A p493
Wide angle corrugated horns analysed using spherical modal-matching. A.D. Olver and J. Xiang H p34

p-adic number theory. R.N. Gorgui-Naguib G p107

MATRIX ALGEBRA

Adaptive state tracking. L. Liu and N.K. Sinha D p429
Analysis of singular systems using orthogonal functions. B.G. Mertzios, F.L. Lewis and G. Vachtsevanos D p323
Analysis of the technique of robust eigenstructure assignment with application to aircraft control. S.K. Mudge and R.J. Patton D p275
Analysis of time-varying singular systems via single-term Walsh-series approach. K.R. Palanisamy and K. Balachandran D p461
Application of optimal control strategy to automatic generation control of a hydrothermal system. M.L. Kothari and J. Nanda D p268
Autocorrelation and power spectrum of Hadamard signalling. S.G. Wilson and M. Lakshman F p258
Characteristic polynomial assignment in 2-dimensional discrete systems. P. Agathoklis and S. Foda D p253
Connection between continuous and discrete Riccati equations with applications to Kalman filtering. M. Salgado, R. Middleton and G.C. Goodwin D p28
Design of a systolic array system for linear state equations. S.-J. Jou and C.-W. Jen G p211
Effects of random sensor motion on bearing estimation by the MUSIC algorithm. K.M. Wong, R.S. Walker and G. Niezgoda F p233
Exact model-matching control of linear discrete-time systems by periodic state or output feedback. T.G. Pimenides D p426
Factored state-space realisation of two-dimensional systems. K. Benmahammed D p421
General analysis of large linear switched capacitor networks. L.B. Wolovitz and J.I. Sewell G p119
Irregular wave propagation characteristics in underground transmission cables. Prof. J.A. Brandão Faria C p131
Linear system reduction using approximate moment matching. A.M. Davidson and I.R. Walters D p73
MCHSE: a versatile framework for the design of two-level power system state estimators. J.F. Marsh and M. Azzam C p291
Matched waveguide five-port with partial symmetry for use in six-port measurement systems. G.P. Riblet H p13
New class of double inductive binary error correcting codes based on the class of Reed–Muller codes. D. Kabilafkas and L.F. Turner F p507
New pole assignment algorithm with reduced norm feedback matrix. R.G. Cameron D p111
Pyramidical pipelining of AO cells for computing successive matrix powers. K. Margaritis, M.P. Bekakos and D.J. Evans J p276
Quantitative design of robust multivariable control systems. O.D.I. Nwokah D d404
Quantitative design of robust multivariable control systems. Y.K. Foo D d404
Quatitative design of robust multivariable control systems. O.D.I. Nwokah D p57
Questions of controllability and observability for nonuniformly sampled discrete systems. A. Fuster and J.M. Guillen D p248
Separation of matrix eigenvalues and structural decomposition of large-scale systems. L.S. Shieh and R.E. Yates D e181
Systolic array for the quotient difference algorithm. D.J. Evans and G.M. Megson E p60
Weighted input predictive controller. K. Warwick and D.W. Clarke D p16
p-adic number theory. R.N. Gorgui-Naguib G p107

MEASUREMENT AND MEASURING

(E)ESI determination from mode-field diameter and refractive index profile measurements on single-mode fibres. F. Martinez and C.D. Hussey J p202
Active network for correcting impulse-voltage measurements. X. Liang and G.O. Martens A p487
Arcs in boundary layer flow. S. Au and P.R. Smy A p69
Comparison of refractive index measurements of opitcal fibres by three methods. W.W. Raine, J.G. Baines and R.J. King J p190
Electrical drive simulator for teaching purposes. J.R. Smith and A.J. Tait A p29
Intermodel and intramodal dispersion measuremnts on 1.3 μm single-mode fibre for use at 0.85 μm. K.C. Byron and D.M. Ashworth J p220
Measurement of chromatic dispersion in stalled single-mode fibre. S.A. Boothroyd J p215
Measurement of threshold voltage and channel length of submicron MOSFETs. *S. Jain I p162*
New lightning flash counter and calibration circuit with improved discrimination of cloud and ground discharges. E. O. Oladiran, E. Pisler and S. Israelsson A p22
Resolution model for measurement of optical fibre preforms by focused laser transverse illumination technique. D.A. Svendsen J p196

METAL-OXIDE-SEMICONDUCTOR STRUCTURES

NMOS flip-flop sensors: a multipurpose digital-output sensor technique. P.J. French, W. Lian and S. Middelhoek D p359
Temperature dependence of the MOS mobility degradation. B.K. Jones and P.C. Russell I p94

MICROPROCESSORS

3-phase voltage sourced reversible rectifier. A.W. Green, J.T. Boys and G.F. Gates B p362
Effective approximations suitable for the control algorithm of microprocessor-*based cycloconvertor. S. Miyazawa, F. Nakamura and N. Yamada B p159*
High-level microprogramming support embedded in silicon. R.F. Hobson E p73
Microprocessor implementation of new optimal PWM switching strategies. S.R. Bowes and A. Midoun B p269
Practical implementations of block-mode image filters using the Fermat number *transform on a microprocessor-based system. A.Y.Md. Shakaff, A. Pajayakrit* and A.G.J. Holt G p141
Simple real-time signal processing laboratory experiment. S.A. Todd and A.T. Sapeluk A p107
XPXM/C: a taxonomy of processor coupling techniques. R. Artym and J.S. Mason E p173

MICROSTRIP AND STRIPLINE

Analysis and optimal design of microstrip sensors. K.B. Khalid, T.S.M. Maclean, M. Razaz and P.W. Webb H p187
Coplanar corporate feed effects in microstrip patch array design. P.S. Hall and C.M. Hall H p180
Design and layout of microstrip structures. F.E. Gardiol H p145
Design of microstrip exponentially tapered lines to match helical antennas to standard coaxial transmission lines. S.P. Mathur, A.K. Sinha and A.K. Sinha H p272

MICROWAVE ACTIVE COMPONENTS

Matching network characterisation by *S*-parameter measurements of two-port active devices. R. Soares, P. Gouzien and P. Legaud H p426

MICROWAVE CIRCUITS AND NETWORKS

Feedforward linearization of 950 MHz amplifiers. R.D. Stewart and F.F. Tusubira H p347
Loss calculations for rectangular coaxial lines. K.H. Lau H p207
Matching network characterisation by *S*-parameter measurements of two-port active devices. R. Soares, P. Gouzien and P. Legaud H p426
Power amplifier for microwave digital radios with inherent phase compensation. P. Bura, D. Gelerman and P. Ntake H p344

MICROWAVE COMMUNICATIONS

Cochannel interference between point-to-point urban microwave radio systems. W.S. Davies and D. Wende F p225

MICROWAVE INTEGRATED CIRCUITS

Curve-fitting formulas for fast determination of accurate resonant frequency of circular microstrip patches. Q. Liu and W.C. Chew H p289

MICROWAVE MEASUREMENTS

Alternative approach to the calibration of six-port reflectometers using four standards. S.P. Yeo and A.L. Ang H p353
Dual resonance. D. Kajfez H p141
Extension of Open Resonator Measurement Technique to achieve fast detailed results over wide bandwidth (8–12 GHz). A.L. Hume and L.J. Auchterlonie H p431
Solution of the resonant frequencies of a microwave dielectric resonator using boundary element method. W. Geyi and W. Hongshi H p333

MICROWAVE PASSIVE COMPONENTS

Analysis of suspended microstrip taper baluns. B. Climer H p65
Designing a symmetrical five-port waveguide junction. A.L. Cullen and S.P. Yeo H p17
Double-sided printed arrays with large bandwidth. E. Levine, S. Shtrikman and D. Treves H p54
Eigenvalues of propagating waves in a circular waveguide with an impedance wall. A.Z. Elsherbeni, J. Stanier and M. Hamid H p23
Field theory analysis of multiport-multidiscontinuity structures: application to short-circuited E-plane septum. J.M. Rebollar and J.A. Encinar H p1
Positions and magnitudes of fixed phase shifters in Butler matrices incorporating 90° hybrids. T.M. Macnamara H p359

MICROWAVE SYSTEMS

Analysis of an FET amplifier using power-dependent *S*-parameters. H. Umeda and M. Nakajima G p162
Limitations in microwave holographic synthetic aperture imaging over a lossy half-space. G. Junkin and A.P. Anderson F p321

MODELLING

Adaptive control of optimal model matching in H^{∞}-norm space. C.-L. Hwang and B.-S. Chen D p295
Algorithm for adaptive error control system synthesis. B. Vučetić, D. Drajić and D. Perišić F p85
Alternative solution for the Chowdhuri–Gross model of lightning-induced voltages on power lines. M.K. Haldar and A.C. Liew C p324
Analytical model for the effective recombination velocity at an arbitrarily doped *high–low junction. N.D. Jankovic and J.P. Karamarkovic I p136*
Approach to the study of small-perturbation stability of multimachine systems. C.T. Tse and S.K. Tso C p396
Characteristic polynomial assignment in 2-dimensional discrete systems. P. Agathoklis and S. Foda D p253
Choice of the scattering carrier in Monte Carlo treatments of carrier-carrier *scattering. K. Sadra, C.M. Maziar and B.G. Streetman I p119*
Co-ordinated design of multimachine power system stabilisers based on damping torque concepts. M.J. Gibbard C p276
Computer-aided design of PWM power-electronic variable-speed drives. S.R. Bowes and J.C. Clare B p240
Computer-aided modelling of discrete high-frequency transistors. K.B. Kumar and V.M. Pandharipande H p171
Controller designs for model-plant parameter mismatch. J.A. Romagnoli, M.N. Karim, O.E. Agamennoni and A. Desages D p157
Development of analytical techniques for system damping evaluation. I.A. Erinmez, P. Humphreys and S.S. Geeves C p238
Digital simulation of *B/H* excursions for power system studies. S. Ray C p202
Dynamic modelling for retaining selected portions of interconnected power networks. M. Brucoli, M. La Scala, N. Pitrone and M. Trovato C p118
ECL fault modelling. C. Morandi, L. Niccolai, F. Fantini and S. Gaviraghi E p312
Exact model-matching control of linear discrete-time systems by periodic state or output feedback. T.G. Pimenides D p426
Generation expansion planning: an expert system approach. S.A. Farghal, M.S. Kandil and M.R. Abdel-Aziz C p261
Hot electron device monitoring and characterisation: a review. J.J. Sanchez, K. *Hsueh and T.A. DeMassa I p113*
Implementation of digital filters via VLSI array processors. B.G. Mertzios and V.L. Syrmos G p78
Large-signal field analysis of an O-type travelling wave amplifier. Part 3: Three-dimensional electron motion. N. Kalyanasundaram and R. Chinnadurai I p59
Modelling, analysis and control of a wind-turbine driven self-excited induction generator. Y. Üçtuğ and M. Demirekler C p268
New method for transmission planning using mixed-integer programming. M.A. Farrag and M.M. El-Metwally C p319
Optimal consumer response for electricity spot pricing. A.K. David C p378

Parametric identification of nonlinear dynamic systems based on nonlinear crosscorrelation functions. R. Haber D p405
Performance evaluation of a clustered multiprocessor organisation using an approximate Markov model. B. Majumdar and J.C. Majithia E p222
Piecewise polynomial models for MOSFET DC characteristics with continuous first order derivative. Y.-H. Jun and S.-B. Park G p241
Power system steady state stability assessment using catastrophe theory. A.A. Sallam C p189
RF analysis of a 12-pulse HVDC convertor. R.V. DeVore, D.F. Kimball, D.G. Kasten and R. Caldecott C p210
Simple *RC* model for integrated multiterminal interconnections. M.G. Harbour and J.M. Drake G p19
Some observations on the failure locus of *npn* transistors and its improvement using graded collector structures. M.J. Humphreys and K.I. Nuttall I p85
State estimation of manoeuvring targets from noisy radar measurements. K.V. Ramachandra F p82
Static fringing capacitance of a dielectric loaded coaxial termination. J.D. Mahony A p448
Timing macromodels for CMOS static set/reset latches and their applications. C.-Y. Wu, C. Li and J.S. Hwang E p151

MODULATION

Class-IV PRS above the Nyquist rate. Wu, Kuang-Tsan, Sasase, Iwao and Feher, Kamilo F p183
Detection processes for V32 modems using trellis coding. J.P. Driscoll and N. Karia F p143
ENCAP-4: an OQPSK-type modulation technique for digital radio. A.M. Gusmão and N.L. Esteves F p105
Fourier–Bessel error performance analysis of 0M-ary QAM signalling through AWGN and cochannel interferences. M. Gouta and S.A. Kosmopoulos F p450
Integration of channel coding and modulation in the ARQ protocols. G. Benelli F p577
Performance analysis of GMSK frequency detection with decision feedback equalisation in digital land mobile radio. F. Adachi and K. Ohno F p199

MONITORING

CMOS integrated circuit for differential monitoring of spacecraft battery cell voltages. L.G. van den Berghe I p151
Diagnostic measurements at UHF in gas insulated substations. B.F. Hampton and R.J. Meats C p137
New monitor for pollution on power line insulators Part 2: Simulated field tests. M. Khalifa, A. El-Morshedy, O.E. Gouda and S.E.-D. Habib C p24

MOTORS

Cascade adaptive speed control of a thyristor-driven DC motor. R.M. Stephan, V. Hahn and H. Unbehauen D p49
Improvement of current loop response of thyristor DC drive by time-domain approximation. D. Drake and P. Lindon B p261

MULTIVARIABLE CONTROL SYSTEMS

Decoupling and data sensitivity in singular systems. B.G. Mertzios and M.A. Christodoulou D p106
Frequency-response method for linear multivariable systems simplification. S.K. Wing and H. Nicholson D p381
Further result on performance degradation for nonlinear multivariable systems. R.F. Harrison and B. Kouvaritakis D p326
Minimax design of optimal stochastic multivariable systems. M.J. Grimble D p436
Multipurpose adaptive control in deterministic multivariable systems. B.-S. Chen and C.-M. Lin D p282
Multivariable control of a liquid–liquid extraction column using a probabilistic automaton. K. Najim D p479
Multivariable self-tuning control with decoupling for robotic manipulators. *M.-H. Liu and W. Lin D p43*
On the improvement of an adaptive observer for multi-output systems. N. Hori, P.N. Nikiforuk, K. Kanai and S. Uchikado D p67
Quantitative design of robust multivariable control systems. O.D.I. Nwokah D d404
Quantitative design of robust multivariable control systems. Y.K. Foo D d404
Quatitative design of robust multivariable control systems. O.D.I. Nwokah D p57
Sequential design of linear quadratic state regulators via the optimal root-locus techniques. L.S. Shieh, H.M. Dib and R.E. Yates D p289
Stability and performance bounds for the linearisation-based analysis and design of multivariable nonlinear systems. D. Valsamis, D.H. Owens and J.O. Gray D p79
Weighted moving identification and control for multivariable systems. W.-T. Wu, Y.T. Chu and K.-C. Chen D p196

NETWORKS

Calculation of the driving-point impedance of a two-terminal network by the dual variational method. E. Moreno and C. Rey G p97
Dynamic modelling for retaining selected portions of interconnected power networks. M. Brucoli, M. La Scala, N. Pitrone and M. Trovato C *p118*
General analysis of large linear switched capacitor networks. L.B. Wolovitz and J.I. Sewell G p119
Network parameter estimation using online data with application to transformer tap position estimation. Th. Van Cutsem and V.H. Quintana C p31
Simple *RC* model for integrated multiterminal interconnections. M.G. Harbour and *J.M. Drake G p19*

NOISE AND INTERFERENCE

Analysis and application of the excision CFAR detector. H. Goldman and I. Bar-David F p563
Formant estimation algorithm based on pole focusing offering improved noise tolerance and feature resolution. G. Duncan and M.A. Jack F p18
Fourier–Bessel error performance analysis of 0M-ary QAM signalling through *AWGN and cochannel interferences.* M. Gouta and S.A. Kosmopoulos F p450
Modified pole-assignment controller for plant models with exact or near pole-*zero cancellation.* M.E. Halpern D p189
Optimum data receiversfor cow SNR data signals in non-gaussian noiseand intersymbol interference: receiver structures and their performance analysis. S. Prasad and S.S. Pathak F p471
Optimum threshold diversity reception of binary noncoherent frequency shift keying. A.M. Maras, H.D. Davidson and A.G.J. Holt F p560
Performance data and limiting conditions of object tracking algorithms in the presence of camera noise. H. Siebert and W. Engelhardt F p111
Performance of the greater-of and censored greater-of detectors in multiple target environments. Emad K. Al-Hussaini F p193
Performance of time-frequency coded spread spectrum systems operating over noisy fading channels. P. Belezinis and L.F. Turner F p513
Rapid acquisition scheme for spread-spectrum radio in a fading environment. N.D. Wilson, S.S. Rappaport and M.M. Vasudevan F p95
Space-based radar: narrowing the main-beam clutter spectrum through the use of a high-aspect-ratio antenna. P. Weber and S. Haykin F p73
State estimation of manoeuvring targets from noisy radar measurements. K.V. Ramachandra F p82
Study of the statistical performance of the Pisarenko harmonic decomposition method. Petre Stoica and Arye Nehorai F p161
Theoretical analysis of ASK heterodyne optical receivers with tuned front ends. I. Garrett and G. Jacobsen J p255
Theoretical performance prediction of the MUSIC algorithm. D.R. Farrier, D.J. Jeffries and R. Mardani F p216

NONDESTRUCTIVE TESTING

On the PSF of a forward-scattering coherent tomographic technique. M. Bramanti and E.A. Salerno H p356
Shunt reactor switching tests in BC Hydro's 500 kV system. D.F. Peelo, B.L. Avent, J.E. Drakos, B.C. Giudici and J.R. Irvine C p420

NONLINEAR SYSTEMS

Further result on performance degradation for nonlinear multivariable systems. R.F. Harrison and B. Kouvaritakis D p326
On period doubling bifurcations in semiconductor lasers. N.H. Jensen, P.L. Christiansen and O. Skovgaard J p285
Optimum size of dissipative nonlinear turnoff snubber. C.G. Steyn B p165
Parametric identification of nonlinear dynamic systems based on nonlinear crosscorrelation functions. R. Haber D p405
Stability and performance bounds for the linearisation-based analysis and design of multivariable nonlinear systems. D. Valsamis, D.H. Owens and J.O. Gray D p79

NUMERICAL ANALYSIS

Closed-form approximation to the bounded part of the exact kernel of a cylindrical antenna integral equation. A. Karwowski H p210
Computation of time response for linear networks: a novel approach. J.C. Mandojana and A. Ambardar G p155
Curve-fitting formulas for fast determination of accurate resonant frequency of *circular microstrip patches.* Q. Liu and W.C. Chew H p289
Dielectrically loaded wire antennas. J.P. Casey and R. Bansal H p103
Discrete image theory for horizontal electric dipoles in a multilayered medium. D.G. Fang, J.J. Yang and G.Y. Delisle H p297
Fourier series treatment of the sleeve monopole antenna. A.D. Wunsch H p217
Frequency-domain analysis of a large NEMP-simulator wire antenna. B.D. Popović H p135
Integral formulation for 3D eddy-current computation using edge elements. R. Albanese and G. Rubinacci A p457
Matching network characterisation by *S*-parameter measurements of two-port active devices. R. Soares, P. Gouzien and P. Legaud H p426
Moment method analysis of a feeding system in a slotted-waveguide antenna. W. Hanyang and W. Wei H p313
New design of composite controllers for synchronous machines via separation of timescales. N.P. Singh, Y.P. Singh and S.I. Ahson D p182
*Pattern synthesis for linear equal-spaced antenna array using an iterative eigen-*modes method. W.-X. Zhang and Y.-M. Bo H p167
Simple expressions for mutual impedances. A.E. Gera H p395
Simple model for the input impedance of coax-fed rectangular microstrip patch antenna for CAD. F. Abboud, J.P. Damiano and A. Papiernik H p323
Solution of the resonant frequencies of a cavity resonator by boundary element *method (BEM). W. Geyi and W. Hongshi H p361*
Synthesis of sub-arrayed monopulse linear arrays through matching of independently optimum sum and difference excitations. Derek A. McNamara *H p293*

OPTICAL AMPLIFIERS

Current crowding effects in GaAs/AlGaAs heterojunction phototransistors. J.K. Twynam and R.C. Woods J p52 J p210
Review of rare earth doped fibre lasers and amplifiers. P. Urquhart J p385
Statistical analysis of nonlinear optical amplifier in high saturation. S. Ruiz-Moreno, G. Junyent, M.J. Soneira and J.R. Usandizaga J p34
Two-channel fibre Raman amplification for wavelength division multiplexed systems. M.L. Dakss and P. Melman J p96

OPTICAL FIBRES

(E)ESI determination from mode-field diameter and refractive index profile measurements on single-mode fibres. F. Martinez and C.D. Hussey J p202
Analysis of nonideal solid-state photomultiplier (SSPM) for optical receivers. R.S. Fyath and J.J. O'Reilly J p423
Analysis of the influence of dark current on the performance of optical receivers *employing superlattice APDs. J.J. O'Reilly and R.S. Fyath J p109*
Comparison of refractive index measurements of opitcal fibres by three methods. W.W. Raine, J.G. Baines and R.J. King J p190
Coupled-mode theory for helical fibres. Jing-ren Qian J p178
Experience with mode-field radius measurements. M. Fox J p211
Fibre laser with adjustable fibre reflector for wavelength tuning and variable *output coupling. C.A. Millar, I.D. Miller, D.B. Mortimore, B.J. Ainslie and P.* Urquhart J p303
GaInAs photodiodes as transfer standards for picosecond measurements. D.A. Humphreys and A.J. Moseley J p146
Glass and its history of service. H. Rawson A p325
High-sensitivity optopneumatic convertor. K.F. Hale, C. Clark, R.F. Duggan and B.E. Jones D p348
Intermodel and intramodal dispersion measuremnts on 1.3 μm single-mode fibre for use at 0.85 μm. K.C. Byron and D.M. Ashworth J p220
Magneto-optical fibre sensors for electrical industry: analysis of performances. S. Donati, V. Annovazzi-Lodi and T. Tambosso J p372

Measurement of chromatic dispersion in stalled single-mode fibre. S.A. Boothroyd J p215
Optical-fibre sensors using micromachined silicon resonant elements. R.E. Jones, J.M. Naden and R.C. Neat D p353
Resolution model for measurement of optical fibre preforms by focused laser transverse illumination technique. D.A. Svendsen J p196
Silicon resonator sensors: interrogation techniques and characteristics. M.J. Tudor, M.V. Andres, K.W.H. Foulds and J.M. Naden D p364

OPTICAL PROCESSING

Matrix power generation using an optical reduced-bandwidth systolic array. G.M. Megson and D.J. Evans J p435
Pyramidical pipelining of AO cells for computing successive matrix powers. K. Margaritis, M.P. Bekakos and D.J. Evans J p276

OPTICAL SENSORS

Current crowding effects in GaAs/AlGaAs heterojunction phototransistors. J.K. Twynam and R.C. Woods J p52 J p210
GaAs monolithic integrated photoreceiver for 0.8 μm wavelength: association of Schottky photodiode and FET. H. Verriele, J.L. Lorriaux, P. Legry, J.P. Gouy, J.P. Vilcot and D. Decoster J p92
High-sensitivity optopneumatic convertor. K.F. Hale, C. Clark, R.F. Duggan and B.E. Jones D p348
Multilayer APDS producing up to two impact ionisations per carrier per stage: optical receiver performance analysis. R.S. Fyath and J.J. O'Reilly J p101
Optical-fibre sensors using micromachined silicon resonant elements. R.E. Jones, J.M. Naden and R.C. Neat D p353
Performance data and limiting conditions of object tracking algorithms in the presence of camera noise. H. Siebert and W. Engelhardt F p111
Silicon resonator sensors: interrogation techniques and characteristics. M.J. Tudor, M.V. Andres, K.W.H. Foulds and J.M. Naden D p364
Theoretical analysis of ASK heterodyne optical receivers with tuned front ends. I. Garrett and G. Jacobsen J p255

OPTICAL SYSTEMS

Influence on IF-filtering on bit error rate floor in coherent optical DPSK-systems. E. Patzak and P. Meissner J p355
Theoery for heterodyne optical ASK receivers using square-law detection and postdetection filtering. G. Jacobsen and I. Garrett J p100

OPTICAL WAVEGUIDES

Analysis of optical waveguides and some discontinuity problems. B.M. Rahman and J. Davies J p339
Application of finite-element method to arbitrarily shaped discontinuities in a dielectric slab waveguide. M. Koshiba and K. Hirayama H p8
Comparison of refractive index measurements of opitcal fibres by three methods. W.W. Raine, J.G. Baines and R.J. King J p190
Design of integrated optical circuits using finite elements. T.P. Young A p135

OPTICS

Analysis of the influence of dark current on the performance of optical receivers employing superlattice APDs. J.J. O'Reilly and R.S. Fyath J p109
Current crowding effects in GaAs/AlGaAs heterojunction phototransistors. J.K. Twynam and R.C. Woods J p52 J p210
Diffraction characteristics of metallic reflection gratings. M.K. Moaveni J p318
Directional coupling snd bistability in four contact twin-stripe injection lasers. I.H. White, R.S. Linton and Professor J.E. Carroll J p25
Industrial applications of computer vision since 1982. Dr. A.M. Wallace E p117
Integrated semiconductor ring lasers. A.F. Jezierski and P.J.R. Laybourn J p17
Matrix power generation using an optical reduced-bandwidth systolic array. G.M. Megson and D.J. Evans J p435
New APD-based receivers providing tolerance to alignment jitter for binary optical communications. Prof. J.J. O'Reilly and R.S. Fyath J p119
Review of rare earth doped fibre lasers and amplifiers. P. Urquhart J p385

OPTIMAL CONTROL

Adaptive control of optimal model matching in H^{∞}-norm space. C.-L. Hwang and B.-S. Chen D p295
Application of optimal control strategy to automatic generation control of a hydrothermal system. M.L. Kothari and J. Nanda D p268
Convergence of explicit LQG self-tuning controllers. M.J. Grimble D p309
Minimax design of optimal stochastic multivariable systems. M.J. Grimble D p436
Multipurpose controller synthesis in LQG optimal systems. B.S. Chen and W.J. Wang D d329
Optimal control of linear time-varying delay systems via single-term Walsh series. K.R. Palanisamy, K. Balachandran and R.S. Ramasamy D p332
Sequential design of linear quadratic state regulators via the optimal root-locus techniques. L.S. Shieh, H.M. Dib and R.E. Yates D p289
Stochastic time-optimal control problems. W. Zhang and D. Elliott D p395

OPTIMISATION

Characteristics and optimal design of variable airgap linear force motors. M.C. Leu, E.V. Scorza and D.L. Bartel B p341
Gradient approximation method for circuit optimisation. I.K. Moukarzel and C.M. Vidallon G p129
Installation of power system stabilisers and the evaluation of settings. K.M. Trantor C p244
Knowledge-based project control employing heuristic optimisation. T.J. Barber and J.T. Boardman A p529
Minimax design of optimal stochastic multivariable systems. M.J. Grimble D p436
Operating cost optimisation of speed-changing induction motors. N. Ammasai Gounden, M. Subbiah and M.R. Krishnamurthy B p33
Optimised design of even-order optical low-pass and high-pass multilayer filters by method of coefficient matching. T.C. Chen J p359
Optimising accelerator for CAD workstation. F.W.D. Woodhams and W.L. Price E p214
Simulation model for optimising energy allocation to hydro-electric and thermal plants in a mixed thermal/hydro-electric power system. U. Navon, I. Zur and D. Weiner C p182
Stability limits for dynamic operation of variable reluctance stepping motor systems. P.J. Clarkson and P.P. Acarnley B p308
Time-domain robustness and performance optimisation of linear quadratic control problems. R.I. Badr, M.F. Hassan, J. Bernussou and A.Y. Bilal D p223

OPTOELECTRONICS

Electrically vrriable couplers for integrated optical circuits. J. Sarma and I. Flint J p268
Fabrication techniques of lithium niobate waveguides. M.N. Armenise J p85
GaAs monolithic integrated photoreceiver for 0.8 μm wavelength: association of Schottky photodiode and FET. H. Verriele, J.L. Lorriaux, P. Legry, J.P. Gouy, J.P. Vilcot and D. Decoster J p92
GaInAs photodiodes as transfer standards for picosecond measurements. D.A. Humphreys and A.J. Moseley J p146
InGaAs *pin* photodiodes on recessed semi-insulating GaAs substrates. P.D. Hodson, R.H. Wallis, J.I. Davies and H.E. Shephard J p2
InGaAs-cap-Monitor integrated 1.55 μm λ/4-shifted DFB lasers with higher output design. Masashi Usami, Shigeyuki Akiba, Katsuyuki Utaka and Yuichi Matsushima J p289
Investigation of an optoelectronic nonlinear effect in a GaInAs photodiode, and its application in a coherent optical communication system. D.A. Humphreys and R.A. Lobbett J p45
Magneto-optical fibre sensors for electrical industry: analysis of performances. S. Donati, V. Annovazzi-Lodi and T. Tambosso J p372
Measurement of chromatic dispersion in stalled single-mode fibre. S.A. Boothroyd J p215
Multilayer APDS producing up to two impact ionisations per carrier per stage: optical receiver performance analysis. R.S. Fyath and J.J. O'Reilly J p101
Optical properties of metal-clad/$Pb_{1-x}Sn_xTe$ waveguides. A. Shahar and A. Zussman J p349
Simulation of inhomogeneous broadening and mode-beating effects in semiconductor lasers. S.J. Chua and W.H. Loh J p310
Theory of avalanche diode harmonic optoelectronic mixer. Muhammad Taher Abuelma'atti J p183

OVERVOLTAGES

Prediction of DC load-rejection dynamic overvoltages using pattern recognition. E.A. Mohamed and G.W. Swift C p480

PATTERN RECOGNITION

Application of the generalised Hough transform to corner detection. E.R. Davies E p49
New technique for speaker-independent isolated-word recognition. M.A. Rashwan and M.M. Fahmy F p251
Optimum patterns for frame alignment. M. Nazir Al-Subbagh and E.V. Jones F p594
Prediction of DC load-rejection dynamic overvoltages using pattern recognition. E.A. Mohamed and G.W. Swift C p480

PERMITTIVITY

Analysis and optimal design of microstrip sensors. K.B. Khalid, T.S.M. Maclean, M. Razaz and P.W. Webb H p187
Static fringing capacitance of a dielectric loaded coaxial termination. J.D. Mahony A p448

PERTURBATION THEORY

Ammeter induced perturbations of Argand diagrams for Debye-like dielectrics. R. Ongaro, A. Pillonnet and P. Desgoutte A p41
Frequency-response method for linear multivariable systems simplification. S.K. Wing and H. Nicholson D p381

PHASING AND PHASE CONTROL

Convergence behaviour of the first-order multi-sampling digital tanlock loop. W.D. Cho and C.K. Un F p457 F e576
Convergence of explicit LQG self-tuning controllers. M.J. Grimble D p309
Stable linear system reduction via a multipoint squared-magnitude continued-fraction expansion. C. Hwang and M.-Y. Chen D p441
Synthesis of control laws with specified gain and phase margin and poles region. T.-T. Lee and S.-H. Lee D p474

PHOTODETECTORS

Frequency response characterisation of superlattice avalanche photodiodes. R.S. Fyath and J.J. O'Reilly J p413
GaInAs photodiodes as transfer standards for picosecond measurements. D.A. Humphreys and A.J. Moseley J p146
In-phase and quadrature detection using 90° optical hybrid receiver: experiments and design considerations. T.G. Hodgkinson, R.A. Harmon, D.W. Smith and P.J. Chidgey J p260
InGaAs *pin* photodiodes on recessed semi-insulating GaAs substrates. P.D. Hodson, R.H. Wallis, J.I. Davies and H.E. Shephard J p2
Multilayer APDS producing up to two impact ionisations per carrier per stage: optical receiver performance analysis. R.S. Fyath and J.J. O'Reilly J p101
Optical receivers based on superlattice avalanche photodiodes: effect of number of stages. R.S. Fyath and J.J. O'Reilly J p298

PHYSICAL PROPERTIES

CMOS mobility degradation coefficients at low temperatures. S.A. Campbell and P. Andersen I p17
How the electrical properties of soil affect the surge performance of buried long systems. F. Lattarulo A p51

PICTURE PROCESSING AND PATTERN RECOGNITION

Lossless progressive image transmission by residual error vector quantiation. L. Wang and M. Goldberg F p421 F e576
Lossless progressive image transmission by residual error vector quantisation. L. Wang and M. Goldberg F e576

PLANT CONDITION MONITORING

Multiple single-chip microcomputer approach to fire detection and monitoring system. A.J. Al-Khalili, D. Al-Khalili and M.S. Khassem G p1

PLASMAS

Surface recombination of ions and cratering by ion impact. K.G. Emeleus and J.R.M. Coulter A p76

POLES AND ZEROS

Adaptive state tracking. L. Liu and N.K. Sinha D p429
Modified pole-assignment controller for plant models with exact or near pole-zero cancellation. M.E. Halpern D p189
Multipurpose adaptive control in deterministic multivariable systems. B.-S. Chen and C.-M. Lin D p282
New pole assignment algorithm with reduced norm feedback matrix. R.G. Cameron D p111
Robust pole-placement algorithm for adaptive control. C.S. Berger D p493
Sequential design of linear quadratic state regulators via the optimal root-locus techniques. L.S. Shieh, H.M. Dib and R.E. Yates D p289
Synthesis of control laws with specified gain and phase margin and poles region. T.-T. Lee and S.-H. Lee D p474

POLYNOMIALS

Adaptive state tracking. L. Liu and N.K. Sinha D p429
Characteristic polynomial assignment in 2-dimensional discrete systems. P. Agathoklis and S. Foda D p253
Factored state-space realisation of two-dimensional systems. K. Benmahammed D p421
Linear system reduction using approximate moment matching. A.M. Davidson and I.R. Walters D p73
Optimised design of even-order optical low-pass and high-pass multilayer filters by method of coefficient matching. T.C. Chen J p359
Piecewise polynomial models for MOSFET DC characteristics with continuous first order derivative. Y.-H. Jun and S.-B. Park G p241
Stable linear system reduction via a multipoint squared-magnitude continued-fraction expansion. C. Hwang and M.-Y. Chen D p441
Weighted input predictive controller. K. Warwick and D.W. Clarke D p16

POWER ELECTRONICS

3-phase voltage sourced reversible rectifier. A.W. Green, J.T. Boys and G.F. Gates B p362
Analysis of conventional snubber circuits for PWM inverters using bipolar transistors. P.D. Evans and L.K. Mestha B p180
Cascade adaptive speed control of a thyristor-driven DC motor. R.M. Stephan, V. Hahn and H. Unbehauen D p49
Characteristics and optimal design of variable airgap linear force motors. M.C. Leu, E.V. Scorza and D.L. Bartel B p341
Computer-aided design of PWM power-electronic variable-speed drives. S.R. Bowes and J.C. Clare B p240
Coupling of discharge currents between conductors of electrical machines owing to laminated steel core. P.J. Tavner and R.J. Jackson B p295
Current pulses in switched reluctance motor. P.H. Chappell B p224
DC-to-utility interface using sinewave resonant inverter. A.K.S. Bhat and S.B. Dewan B p193
Finite element method for 3D eddy current flow in thin conducting sheets. D. Rodger and N. Atkinson A p369
Method of detecting and modelling presence of shorted turns in DC field winding of cylindrical rotor synchronous machines using two airgap search coils. R.L. Stoll and A. Hennache B p281
Microprocessor implementation of new optimal PWM switching strategies. S.R. Bowes and A. Midoun B p269
New current control scheme for PWM inverters. P. Enjeti, J.F. Lindsay, P.D. Ziogas and M.H. Rashid B p172
Optimal PWM microprocessor-controlled current-source inverter drives. S.R. Bowes and R.I. Bullough B p59
Optimum size of dissipative nonlinear turnoff snubber. C.G. Steyn B p165
Output characteristic stabilisation of power MOSFETs. M.A. Abdala and B.K. Jones I p91
Performance of split-coil switched reluctance drive. D.W.J. Pulle B p318
Physical significance of sub-subtransient quantities in dynamic behaviour of synchronous machines. I.M. Canay B p334
Review of recent progress in linear motors. G.W. McLean B p380
Scalar control: an alternative AC drive philosophy. J.T. Boys and S.J. Walton B p151
Simulation of high voltage power switching transistors under forced gain and inductive load turn-off conditions. D.J. Roulston and J.-B. Quoirin I p7
Stability limits for dynamic operation of variable reluctance stepping motor systems. P.J. Clarkson and P.P. Acarnley B p308
Thermal CAD of power hybrid devices using light computer means. A. Napieralski and F. Pompignac G p34

POWER SYSTEM PROTECTION

Block pulse functions based algorithm for symmetrical components calculation. S.R. Kolla C p487
Co-ordinated design of multimachine power system stabilisers based on damping torque concepts. M.J. Gibbard C p276
Computer assessment of IDMT relay performance for phase and earth faults on interconnected power systems. D. Lidgate and H. Askarian Abyaneh C p157
New algorithm for distance protection of high voltage transmission lines. M. Fikri and M.A.H. El-Sayed C p436

POWER SYSTEMS AND PLANT

Application of optimal control strategy to automatic generation control of a hydrothermal system. M.L. Kothari and J. Nanda D p268
Approach to the study of small-perturbation stability of multimachine systems. C.T. Tse and S.K. Tso C p396
Automatic controls in building services. M.V. Harrold and D.M. Lush B p105
Circuit allocation in subtransmission switching substations using best-first search strategy. Kit Po Wong and Hon Nin Cheung C p489
Design optimisation of power system stabilisers based on modal and eigenvalue-sensitivity analyses. C.T. Tse and S.K. Tso C p406
Fast methods for direct assessment of power system transient stability. F.J. Al Azzawi, F.F. Al Baldawi and C.L. Narayana C p469
Harmonic modelling of synchronous machines. P.M. Hart and W.J. Bonwick B p52
Incorporation of load models in the direct method of power system transient stability. M.M. Abu-Elnaga, M.A. El-Kady and R.D. Findlay C p474
Load forecasting under spot pricing. A.K. David C p369
Power components in a system with sinusoidal and nonsinusoidal voltages and/or currents. M.A. Slonim and J.D. Van Wyk B p76
Power projects: the role of the contractor. K.M. Odell C p1
Poynting vector probe for measuring power at extremely low power factor. W.Z. Fam A p385
Prediction of DC load-rejection dynamic overvoltages using pattern recognition. E.A. Mohamed and G.W. Swift C p480
Proximity effects on the ground fault current distribution within the earthing system formed by a substation and the associated transmission lines. J.M. Nahman C p497
Two time scale decomposition and stability analysis of power systems. K. Khorasani and M.A. Pai D p205

POWER TRANSMISSION AND DISTRIBUTION

British system operation experience. A. Myles C p233
Computer-based supervisory control and energy management system for the city of Cape Town. A.P.J. Malt, G.D. Clarke and P.E. Robinson C p41
Development of analytical techniques for system damping evaluation. I.A. Erinmez, P. Humphreys and S.S. Geeves C p238
Dynamic response analysis of marine power systems. Ta-Peng Tsao, Shi-Lin Chen, Ching-Lien Huang and Wei-Cheng Lin C p74
Installation of power system stabilisers and the evaluation of settings. K.M. Trantor C p244
MCHSE: a versatile framework for the design of two-level power system state estimators. J.F. Marsh and M. Azzam C p291
Managing a business in the public sector. D.G. Jefferies A p13
Parallel processor algorithm for power system simulation. M. Rafian, M.J.H. Sterling and M.R. Irving C p285
Power projects: the role of the contractor. K.M. Odell C p1
Power system steady state stability assessment using catastrophe theory. A.A. Sallam C p189
Programme of system proving tests and operational experience. C.M. Gibson C p255
Realistic power system security algorithm. A. Mohamed and G.B. Jasmon C p98
Supertension or superconducting cables: 20 years on — can the UK regain the lead?. D.R. Edwards C p9
Testing of power system stabilisers. R.F.B. MacLaren C p251

POWER UTILISATION AND INDUSTRIAL APPLICATIONS

Automatic controls in building services. M.V. Harrold and D.M. Lush B p105

PROCESS CONTROL

Multivariable control of a liquid–liquid extraction column using a probabilistic automaton. K. Najim D p479

PRODUCTION ENGINEERING

The effect of the defence sector on the UK electronics industry. P.E. Trier, P. Gummett, J. Richards and A. Wallard A p419

PROJECT AND PRODUCTION ENGINEERING

Implications of military engineering. T.D.N. Williams A p303
Knowledge-based project control employing heuristic optimisation. T.J. Barber and J.T. Boardman A p529
Polyhedral dynamics applied to design and project management. B. Bolton A p241
Systems creativity. D.K. Hitchins A p407
Technology and engineering design: shaping a better future or repeating the mistakes of the past?. P.T. Kidd A p297

PROJECT MANAGEMENT

Co-operative research into the engineering and design of a new digital directional comparison scheme. A.T. Johns and E.P. Walker C p334
Power projects: the role of the contractor. K.M. Odell C p1
Research co-operatives: experiences with a small-scale approach. D.P. Burton and T. Coffey A p539

QUANTUM ELECTRONICS

Bistability in inhomogeneously pumped quantum well laser diodes. A.I. Kucharska, P. Blood, E.D. Fletcher and P.J. Hulyer J p31
Explicit approximations for the linewidth-enhancement factor in quantum-well lasers. L.D. Westbrook and M.J. Adams J p223
Limits of electro-absorption in high purity GaAs, and the optimisation of waveguide devices. D.R. Wight, A.M. Keir and G.J. Pryce J p39
Statistical analysis of nonlinear optical amplifier in high saturation. S. Ruiz-Moreno, G. Junyent, M.J. Soneira and J.R. Usandizaga J p34

RADAR AND RADIONAVIGATION

Adaptive linear-phase complex filtering algorithms. Xian Chen F p481 F e576
Algebraic formulation of Kumaresan-Tufts superresolution method, showing relation to ME and MUSIC methods. U. Nickel F p7
Comparison of the seismic and ground probing radar methods in geological surveying. D.M. McCann, P.D. Jackson and P.J. Fenning F p380
Detection of buried plant. N. Osumi and K. Ueno F p330
Early developments in ground-probing radar at ERA Technology Ltd. R.J. Chignell, P.A. Jackson and K. Madani F p362
Effects of random sensor motion on bearing estimation by the MUSIC algorithm. K.M. Wong, R.S. Walker and G. Niezgoda F p233
FMCW radar for hidden object detection. A.D. Olver and L.G. Cuthbert F p354
Geophysical radar design. G.K.A. Oswald F p371
Introduction to Subsurface radar. D.J. Daniels, D.J. Gunton and H.F. Scott F p278
Limitations in microwave holographic synthetic aperture imaging over a lossy half-space. G. Junkin and A.P. Anderson F p321
New angle-of-arrival estimator: comparative evaluation applied to the low-angle tracking radar problem. J. Reilly, J. Litva and P. Bauman F p408 F e576
Performance of the greater-of and censored greater-of detectors in multiple target environments. Emad K. Al-Hussaini F p193

Representation of radar sea clutter. C.J. Oliver F p497
Space-based radar: narrowing the main-beam clutter spectrum through the use of a high-aspect-ratio antenna. P. Weber and S. Haykin F p73
State estimation of manoeuvring targets from noisy radar measurements. K.V. Ramachandra F p82
Suboptimum adaptive polarisation cancellers for dual-polarisation radars. M. Gherardelli, D. Giuli and M. Fossi F p60
Theoretical performance prediction of the MUSIC algorithm. D.R. Farrier, D.J. Jeffries and R. Mardani F p216
Tracking systems for satellite communications. G.J. Hawkins, D.J. Edwards and J.P. McGeehan F p393
Underground mapping of utility lines using impulse radar. R. Caldecott, M. Poirier, D. Scofea, D.E. Svoboda and A.J. Terzuoli F p343

RADIO ASTRONOMY

Phase retrieval radio holography in the Fresnel region: Tests on the 30 m telescope at 86 GHz. D. Morris, H. Hein, H. Steppe and J.W.M. Baars H p61

RADIO-WAVE PROPAGATION (MICROWAVE)

Available time statistics of rain attenuation on earth-space path. H. Fukuchi and Y. Otsu H p387
Cochannel interference between point-to-point urban microwave radio systems. W.S. Davies and D. Wende F p225
Transfer function parameters in multipath channel modelling. T. Raji F p262

RADIO-WAVE PROPAGATION (TERRAIN EFFECTS)

Outage probability calculations for multiple cochannel interferers in cellular mobile radio systems. K.W. Sowerby and A.G. Williamson F p208

RADIOCOMMUNICATION

Asymptotic behaviour of bit error rate for bandpass direct-sequence spread-spectrum modulation systems. L. Alcuri, G. Mamola and E. Randazzo F p487
Cochannel interference between point-to-point urban microwave radio systems. W.S. Davies and D. Wende F p225
ENCAP-4: an OQPSK-type modulation technique for digital radio. A.M. Gusmão and N.L. Esteves F p105
Effects of correlated fading on level crossing rates and average fade durations with predetection diversity reception. F. Adachi, M.T. Feeney and J.D. Parsons F p11
Level crossing rate and average fade duration for time diversity reception in Rayleigh fading conditions. F. Adachi, M.T. Feeney and J.D. Parsons F p501
Optimum data receiversfor cow SNR data signals in non-gaussian noiseand intersymbol interference: receiver structures and their performance analysis. S. Prasad and S.S. Pathak F p471
Outage probability calculations for multiple cochannel interferers in cellular mobile radio systems. K.W. Sowerby and A.G. Williamson F p208
Performance analysis of GMSK frequency detection with decision feedback equalisation in digital land mobile radio. F. Adachi and K. Ohno F p199
Performance of a 16-ARY DEQAM modem employing a baseband or RF predistorter over a regenerative satellite link. S.W. Cheung and A.H. Aghvami F p547
Performance of slot synchronous time-frequency coded spread spectrum systems. P. Belezinis, L.F. Turner and I.M.I. Habbab F p520
Performance of time-frequency coded spread spectrum systems operating over noisy fading channels. P. Belezinis and L.F. Turner F p513
Photovoltaic power generators for radio communication systems in Jordan. H.M. El-Zayyat and M. Mahmoud C p385
Rapid acquisition scheme for spread-spectrum radio in a fading environment. N.D. Wilson, S.S. Rappaport and M.M. Vasudevan F p95
Simultaneous voice and data transmission in private mobile radio using a narrowband FM channel. M.O. Al-Nuaimi and M. Charnley F p439
Town crier to world seer: a broadcast odyssey. John R. Forrest F p1
Tracking systems for satellite communications. G.J. Hawkins, D.J. Edwards and J.P. McGeehan F p393
Transfer function parameters in multipath channel modelling. T. Raji F p262
Two-channel direct-bit detection receiver for 16-PSK modulated signals. D.C. Bukofzer F p461 F e576

RAILWAY ELECTRIFICATION AND TRANSPORTATION

Dublin area rapid transit. C.D. Waters, M. Farrell, R.P. Grainger, P.J. Leahy and B. Mellitt B p134
Modelling of inverter-controlled asynchronous drives for system simulation in DC railways. Z.S. Mouneimne and B. Mellitt B p210

RECEIVERS

Analysis and application of the excision CFAR detector. H. Goldman and I. Bar-David F p563
Analysis of nonideal solid-state photomultiplier (SSPM) for optical receivers. R.S. Fyath and J.J. O'Reilly J p423
Convergence behaviour of the first-order multi-sampling digital tanlock loop. W.D. Cho and C.K. Un F p457 F e576
Effects of correlated fading on level crossing rates and average fade durations with predetection diversity reception. F. Adachi, M.T. Feeney and J.D. Parsons F p11
In-phase and quadrature detection using 90° optical hybrid receiver: experiments and design considerations. T.G. Hodgkinson, R.A. Harmon, D.W. Smith and P.J. Chidgey J p260
Level crossing rate and average fade duration for time diversity reception in Rayleigh fading conditions. F. Adachi, M.T. Feeney and J.D. Parsons F p501
New APD-based receivers providing tolerance to alignment jitter for binary optical communications. Prof. J.J. O'Reilly and R.S. Fyath J p119
Optimum data receiversfor cow SNR data signals in non-gaussian noiseand intersymbol interference: receiver structures and their performance analysis. S. Prasad and S.S. Pathak F p471
Rapid acquisition scheme for spread-spectrum radio in a fading environment. N.D. Wilson, S.S. Rappaport and M.M. Vasudevan F p95
Theoery for heterodyne optical ASK receivers using square-law detection and postdetection filtering. G. Jacobsen and I. Garrett J p100
Two-channel direct-bit detection receiver for 16-PSK modulated signals. D.C. Bukofzer F p461 F e576

RELAYS

Co-operative research into the engineering and design of a new digital directional comparison scheme. A.T. Johns and E.P. Walker C p334
Digital protective relaying through recursive least-squares identification. A. Isaksson C p441
New algorithm for distance protection of high voltage transmission lines. M. Fikri and M.A.H. El-Sayed C p436

RELIABILITY

Asymptotic behaviour of bit error rate for bandpass direct-sequence spread-spectrum modulation systems. L. Alcuri, G. Mamola and E. Randazzo F p487
Evaluating the approximate probability distributions of load point reliability indices in power distribution networks. E.N. Dialynas C p450

RELUCTANCE MOTORS

Current pulses in switched reluctance motor. P.H. Chappell B p224
Performance of split-coil switched reluctance drive. D.W.J. Pulle B p318

REMOTE SENSING

Scale based algorithm for recognition of blurred planar objects. D.T. Nguyen and Ding-Yi Xu E p307

REVIEWS OF PROGRESS

Photovoltaic power generators for radio communication systems in Jordan. H.M. El-Zayyat and M. Mahmoud C p385
Social benefits of electricity. B. Bowers A p291

ROBOTICS

Are we in control?. B.V. Jayawant D p1
Co-ordinate determination and performance analysis for robot manipulators and guided vehicles. M. Dickinson and A.S. Morris A p95
Multivariable self-tuning control with decoupling for robotic manipulators. M.-H. Liu and W. Lin D p43

SATELLITE LINKS AND SPACE COMMUNICATION

Adaptive frame synchroniser for digital satellite communication systems. L.-K. Shark, T.J. Terrell and R.J. Simpson F p51
Available time statistics of rain attenuation on earth-space path. H. Fukuchi and Y. Otsu H p387
Inexpensive multi-mode satellite tracking feed antenna. P.D. Patel H p381
Performance of a 16-ARY DEQAM modem employing a baseband or RF predistorter over a regenerative satellite link. S.W. Cheung and A.H. Aghvami F p547
Some new retransmission strategies for multipacket slotted ALOHA protocol. G. Benelli F p585
Synthesis of shaped-beam reflector antenna patterns. J. Bergmann, R.C. Brown, P.J.B. Clarriccats and H. Zhou H p48
Tracking systems for satellite communications. G.J. Hawkins, D.J. Edwards and J.P. McGeehan F p393

SCHOTTKY-BARRIER DEVICES

Influence of gallium in a metallisation on GaAs. R.P. Gupta, J. Wuerfl, H.L. Hartnagel and W.S. Khokle I p25
Transient analysis of Schottky-barrier diodes. A. McCowen, S.B.H. Shaari and K. Board I p71

SEMICONDUCTOR DEVICES AND MATERIALS

Analysis of nonideal solid-state photomultiplier (SSPM) for optical receivers. R.S. Fyath and J.J. O'Reilly J p423
Analytical model for the effective recombination velocity at an arbitrarily doped high–low junction. N.D. Jankovic and J.P. Karamarkovic I p136
CMOS mobility degradation coefficients at low temperatures. S.A. Campbell and P. Andersen I p17
Choice of the scattering carrier in Monte Carlo treatments of carrier-carrier scattering. K. Sadra, C.M. Maziar and B.G. Streetman I p119
Computation of large signal GaAs Impatt diode parameters from closed form analytical solution. S.R. Shukla, Prem Swarup and M.N. Sen I p13
Current equalising transformer for current balance in parallel-connected 12-pulse converter. F.T. Bennell B p85
Dynamic capacitance effects in DRAM word lines. W.H. Henkels I p1
Effect of HCl/O_2 and O_2 dry environments on the distribution of boron in oxide and silicon from thermally deposited boron. H. Kemhadjian and G.M. Mhango I p159
Effective photoconductivity and plasma depth in optically quasi-CW controlled microwave switching devices. W. Platte J p251
Fault tolerance: step towards WSI. R.M. Lea and H.S. Bolouri E p289
Frequency response characterisation of superlattice avalanche photodiodes. R.S. Fyath and J.J. O'Reilly J p413
General experimental method of parameter extraction for CMOS timing macro-models. C.-Y. Wu, W.-Y. Jang and H.-J. Wu I p39
Hot electron device monitoring and characterisation: a review. J.J. Sanchez, K. Hsueh and T.A. DeMassa I p113
Influence of gallium in a metallisation on GaAs. R.P. Gupta, J. Wuerfl, H.L. Hartnagel and W.S. Khokle I p25
Influence of the preoxidation cleaning on the electrical properties of thin SiO_2 layers. J.L. Prom, J. Castagne, G. Sarrabayrouse and A. Munoz-Yague I p20
Lucky drift models of multilayered structures and approximate forms of lucky drift expressions. J.S. Marsland and R.C. Woods J p165
Measurement of threshold voltage and channel length of submicron MOSFETs. S. Jain I p162
Miniature silicon resonant pressure sensor. J.C. Greenwood and D.W. Satchell D p369
Optical annealing of ohmic contacts for GaAs high-speed integrated circuits using a zirconium diboride barrier layer. J. Herniman, D.A. Allan and P.J. O'Sullivan I p67
Optical properties of metal-clad/$Pb_{1-x}Sn_xTe$ waveguides. A. Shahar and A. Zussman J p349
Optical receivers based on superlattice avalanche photodiodes: effect of number of stages. R.S. Fyath and J.J. O'Reilly J p298

Optical-fibre sensors using micromachined silicon resonant elements. R.E. Jones, J.M. Naden and R.C. Neat D p353
Output characteristic stabilisation of power MOSFETs. M.A. Abdala and B.K. Jones I p91
Output characteristics of insulated gate bipolar transistor modules and improvement with substrate control. M.J. Lazarus, I. Smith, L.L. Jones and A.D. Finney I p97
SEM-EBIC studies of electron beam irradiation memory effects in a-Si : H. N.R. Rajopadhye, M. Singh, N.K.L. Raja and W.S. Khokle I p125
Semivectorial polarised H field solutions for dielectric waveguides with arbitrary index profiles. M.S. Stern J p333
Silicon flow sensors. B.W. van Oudheusden D p373
Silicon resonator sensors: interrogation techniques and characteristics. M.J. Tudor, M.V. Andres, K.W.H. Foulds and J.M. Naden D p364
Simulation of high voltage power switching transistors under forced gain and inductive load turn-off conditions. D.J. Rc_'ston and J.-B. Quoirin I p7
Some observations on the failure locus of *npn* transistors and its improvement using graded collector structures. M.J. Humphreys and K.I. Nuttall I p85
Stabilised high power MOSFET modules. M.J. Lazarus, K.V.O. Rabah and P.M. Ripley I p155
Symple: a symbolic layout tool for bipolar and MOS VLSI. K.S.B. Szabó, J.M. Leask and M.I. Elmasry I p29
Temperature dependence of the MOS mobility degradation. B.K. Jones and P.C. Russell I p94
Transient analysis of Schottky-barrier diodes. A. McCowen, S.B.H. Shaari and K. Board I p71
Transient analysis of a triangular-barrier bulk unipolar diode. A. McCowen, S.B.H. Shaari and K. Board I p107
Transit times in the high-density interconnections on GaAs-based VHSIC. A.K. Goel I p129

SEMICONDUCTOR LASERS

Chirping effects in phase-coupled laser arrays. A. Hardy, W. Streifer and M. Osiński J p443
Filtered laser beat-frequency fluctuations. I. Garrett, G. Jacobsen and R.J.S. Pedersen J p408
GaInAsP twin-stripe lasers with asymmetrical waveguide channels. Th. Wolf, F. Kappeler, B. Stegmüller and M.-C. Amann J p5
InGaAs-cap-Monitor integrated 1.55 μm λ/4-shifted DFB lasers with higher output design. Masashi Usami, Shigeyuki Akiba, Katsuyuki Utaka and Yuichi Matsushima J p289
Integrated semiconductor ring lasers. A.F. Jezierski and P.J.R. Laybourn J p17
Model for multimode picosecond dynamic laser chirp based on transmission line laser model. A.J. Lowery J p126 J p297
New inline wideband dynamic semiconductor laser amplifier model. A.J. Lowery J p243
On period doubling bifurcations in semiconductor lasers. N.H. Jensen, P.L. Christiansen and O. Skovgaard J p285
Simulation of inhomogeneous broadening and mode-beating effects in semiconductor lasers. S.J. Chua and W.H. Loh J p310

SERVOMOTORS

Adaptive model following control of electrohydraulic velocity control systems subjected to unknown disturbances. J.S. Yun and H.S. Cho D p149

SIGNAL PROCESSING

Adaptive linear-phase complex filtering algorithms. Xian Chen F p481 F e576
Algebraic formulation of Kumaresan-Tufts superresolution method, showing relation to ME and MUSIC methods. U. Nickel F p7
Autocorrelation and power spectrum of Hadamard signalling. S.G. Wilson and M. Lakshman F p258
Class of optimum signal shapes in data transmission. E. Panayirci and N. Tuğbay F p272
Correlation properties of dual-BCH, Kasami and other sequences for spread-spectrum, multiple-access systems. C.S. Goswami and M. Beale F p114
Design of N-dimensional multiplierless spherically symmetric FIR digital filters by transformation. C. Charalambous G p203
Effects of random sensor motion on bearing estimation by the MUSIC algorithm. K.M. Wong, R.S. Walker and G. Niezgoda F p233
Flat-top windows for PWM waveform processing via DFT. Luigi Salvatore and Amerigo Trotta B p346
Formant estimation algorithm based on pole focusing offering improved noise tolerance and feature resolution. G. Duncan and M.A. Jack F p18
Formant estimation system based on weighted least-squares lattice filters. X. Huang, G. Duncan and M. Jack F p539
Highly parallel processors in military systems. J.B.G. Roberts, B.C. Merrifield, P. Simpson and J.S. Ward E p202
Improved pitch detection algorithm employing temporal structure investigation of the speech waveform. A.M. Sutherland, M.A. Jack and J. Laver F p169
Logarithmic and exponential switched-capacitor convertors and some of their applications. A. Cichocki and R. Unbehauen G p58
Minimax design of 2D FIR linear phase digital filters. C. Charalambous and H. Khreishi G p194
New APD-based receivers providing tolerance to alignment jitter for binary optical communications. Prof. J.J. O'Reilly and R.S. Fyath J p119
New angle-of-arrival estimator: comparative evaluation applied to the low-angle tracking radar problem. J. Reilly, J. Litva and P. Bauman F p408 F e576
New technique for speaker-independent isolated-word recognition. M.A. Rashwan and M.M. Fahmy F p251
Reconfigurable programmable architecture for cascaded unit elements and lattice WDFs. P.S. Matharu and S.S. Lawson G p181
Simple real-time signal processing laboratory experiment. S.A. Todd and A.T. Sapeluk A p107
Study of the statistical performance of the Pisarenko harmonic decomposition method. Petre Stoica and Arye Nehorai F p161
Suboptimum adaptive polarisation cancellers for dual-polarisation radars. M. Gherardelli, D. Giuli and M. Fossi F p60
Systolic array implementation of a decimator and an interpolator. H.K. Kwan and T.S. Okullo-Oballa E p70
Theoretical performance prediction of the MUSIC algorithm. D.R. Farrier, D.J. Jeffries and R. Mardani F p216

SIMULATION

Analysis of coloured filter controllers for bank-to-turn CLOS guidance. G.W. Irwin and R.J. Fleming D p486
Choice of the scattering carrier in Monte Carlo treatments of carrier-carrier scattering. K. Sadra, C.M. Maziar and B.G. Streetman I p119
Controller designs for model-plant parameter mismatch. J.A. Romagnoli, M.N. Karim, O.E. Agamennoni and A. Desages D p157
ECL fault modelling. C. Morandi, L. Niccolai, F. Fantini and S. Gaviraghi E p312
Electrical drive simulator for teaching purposes. J.R. Smith and A.J. Tait A p29
Filter realisation by passive network simulation. Li Ping and J.I. Sewell G p167
General experimental method of parameter extraction for CMOS timing macro-models. C.-Y. Wu, W.-Y. Jang and H.-J. Wu I p39
Modular, offline, full duplex telephone channel simulator for high speed data transceiver evaluation. S. Dimolitsas and J.E. Gunn F p155
Near-maximum-likelihood decoding of convolutional codes. Z.C. Zhu and A.P. Clark F p33
New floating point impedance simulation using operational amplifiers. V. Singh G p116
Novel wide-range electronically tunable ideal grounded inductance. I.A. Khan, M.T. Ahmed and T. Parveen G p104
Parallel processor algorithm for power system simulation. M. Rafian, M.J.H. Sterling and M.R. Irving C p285
Parametric identification of nonlinear dynamic systems based on nonlinear crosscorrelation functions. R. Haber D p405
Simulated Viterbi decoding using importance sampling. M.A. Herro and J.M. Nowack F p133
Simulation model for optimising energy allocation to hydro-electric and thermal plants in a mixed thermal/hydro-electric power system. U. Navon, I. Zur and D. Weiner C p182

SOCIAL RESPONSIBILITY

Engineering ideology. K. Strauss A p261

SOLAR CELLS

Photovoltaic power generators for radio communication systems in Jordan. H.M. El-Zayyat and M. Mahmoud C p385

SPACE COMMUNICATION

Application of spherical wave expansions to direct GO far field synthesis. M.J. Mehler H p41

SPEECH SYNTHESIS

Formant estimation system based on weighted least-squares lattice filters. X. Huang, G. Duncan and M. Jack F p539
Improved pitch detection algorithm employing temporal structure investigation of the speech waveform. A.M. Sutherland, M.A. Jack and J. Laver F p169
New technique for speaker-independent isolated-word recognition. M.A. Rashwan and M.M. Fahmy F p251

STABILISERS

British system operation experience. A. Myles C p233
Co-ordinated design of multimachine power system stabilisers based on damping torque concepts. M.J. Gibbard C p276
Identification of optimum site for power system stabiliser applications. D.R. Ostojic C p416
Installation of power system stabilisers and the evaluation of settings. K.M. Trantor C p244
Programme of system proving tests and operational experience. C.M. Gibson C p255
Testing of power system stabilisers. R.F.B. MacLaren C p251

STABILITY

Approach to the study of small-perturbation stability of multimachine systems. C.T. Tse and S.K. Tso C p396
British system operation experience. A. Myles C p233
Convergence of explicit LQG self-tuning controllers. M.J. Grimble D p309
Design optimisation of power system stabilisers based on modal and eigenvalue-sensitivity analyses. C.T. Tse and S.K. Tso C p406
Development of analytical techniques for system damping evaluation. I.A. Erinmez, P. Humphreys and S.S. Geeves C p238
Dynamic modelling for retaining selected portions of interconnected power networks. M. Brucoli, M. La Scala, N. Pitrone and M. Trovato C p118
Fast methods for direct assessment of power system transient stability. F.J. Al Azzawi, F.F. Al Baldawi and C.L. Narayana C p469
Incorporation of load models in the direct method of power system transient stability. M.M. Abu-Elnaga, M.A. El-Kady and R.D. Findlay C p474
New design of composite controllers for synchronous machines via separation of timescales. N.P. Singh, Y.P. Singh and S.I. Ahson D p182
Phase-locked oscillator control system for thyristor-controlled reactors. J.D. Ainsworth C p146
Power system steady state stability assessment using catastrophe theory. A.A. Sallam C p189
Programme of system proving tests and operational experience. C.M. Gibson C p255
Real-time analytic sensitivity method for transient security assessment and preventive control. Y. Xue, Th. Van Cutsem and M. Ribbens-Pavella C p107
Robustness analysis of discrete-time adaptive control systems using input-output stability theory: a tutoral. W.R. Cluett, S.L. Shah and D.G. Fisher D p133
Self-tuning control of systems with infrequent and delayed output sampling. R. Scattolini D p213
Stability and performance bounds for the linearisation-based analysis and design of multivariable nonlinear systems. D. Valsamis, D.H. Owens and J.O. Gray D p79
Stable linear system reduction via a multipoint squared-magnitude continued-fraction expansion. C. Hwang and M.-Y. Chen D p441
Time-domain robustness and performance optimisation of linear quadratic control problems. R.I. Badr, M.F. Hassan, J. Bernussou and A.Y. Bilal D p223
Two time scale decomposition and stability analysis of power systems. K. Khorasani and M.A. Pai D p205
Two-loop self-tuning cascade control. P.J. Gawthrop and M. Kharbouch D p232
Wide-range power system pole placer. H.M. Soliman and M.M.F. Sakr C p195

STANDARDISATION AND STANDARDS

History of the electrical units and early standards. A.C. Lynch A d88
The St. Andrews 1863 British Association Ohm. J.F. Allen and E.M. Wray A p88

STEPPING MOTORS

Stability limits for dynamic operation of variable reluctance stepping motor systems. P.J. Clarkson and P.P. Acarnley B p308

SUPERCONDUCTIVITY

Comparison of transient performance of superconducting and conventional generators in a multimachine system. S.M. Osheba, M.A.A.S. Alyan and Y.H.A. Rahim C p389
Supertension or superconducting cables: 20 years on — can the UK regain the lead?. D.R. Edwards C p9

SWITCHES AND SWITCHING THEORY

Criteria for interfeeder switching in distribution systems. C.S. Chen, J.S. Wu and Y.N. Chang C p461

SWITCHGEAR

Circuit allocation in subtransmission switching substations using best-first search strategy. Kit Po Wong and Hon Nin Cheung C p489
Specified current in emergency load switches. P.D. Bourkas, E.A. Kayafas and A.V. Machias C p330

SYNCHRONOUS MOTORS

Harmonic modelling of synchronous machines. P.M. Hart and W.J. Bonwick B p52
Method of detecting and modelling presence of shorted turns in DC field winding of cylindrical rotor synchronous machines using two airgap search coils. R.L. Stoll and A. Hennache B p281
New design of composite controllers for synchronous machines via separation of timescales. N.P. Singh, Y.P. Singh and S.I. Ahson D p182
New dynamic inductance concept and its application to synchronous machine modelling. C.D. Manning and Mohamed A. Abdel Halim B p231
Physical significance of sub-subtransient quantities in dynamic behaviour of synchronous machines. I.M. Canay B p334

SYSTEM PROTECTION

Design of a digital protection scheme for power transformers using optimal state observers. Y.V.V.S. Murty, W.J. Smolinski and S. Sivakumar C p224
Use of an auto-expansion circuit breaker in a ring main unit. G. Bernard, G. Perrissin and J. Marzocca C p219

TELECOMMUNICATION

Class of optimum signal shapes in data transmission. E. Panayirci and N. Tuğbay F p272
Near-maximum-likelihood decoding of convolutional codes. Z.C. Zhu and A.P. Clark F p33
Optimum threshold diversity reception of binary noncoherent frequency shift keying. A.M. Maras, H.D. Davidson and A.G.J. Holt F p560
Sequential block interleave coding of two-tone facsimile data. B.S. Tan and L.F. Turner E p95

TELECOMMUNICATION TRAFFIC

Simultaneous voice and data transmission in private mobile radio using a narrowband FM channel. M.O. Al-Nuaimi and M. Charnley F p439

TELEPHONE EXCHANGES AND NETWORKS

Modular, offline, full duplex telephone channel simulator for high speed data transceiver evaluation. S. Dimolitsas and J.E. Gunn F p155

TELETEXT

Town crier to world seer: a broadcast odyssey. John R. Forrest F p1

TELEVISION

Estimating the conditional entropy of a digital television signal. M.J. Knee F p431
Town crier to world seer: a broadcast odyssey. John R. Forrest F p1

THYRISTORS

Cascade adaptive speed control of a thyristor-driven DC motor. R.M. Stephan, V. Hahn and H. Unbehauen D p49
Determination of thyristor reverse recovery cirrent parameters. Chang Woo Lee and Song Bai Park B p91
Improvement of current loop response of thyristor DC drive by time-domain approximation. D. Drake and P. Lindon B p261
New dynamic inductance concept and its application to synchronous machine modelling. C.D. Manning and Mohamed A. Abdel Halim B p231
Simplified configuration of GTO current source inverter for induction motor drives. R. Itoh B p218

TOLERANCE ANALYSIS

Specified current in emergency load switches. P.D. Bourkas, E.A. Kayafas and A.V. Machias C p330

TRANSDUCERS

Automotive transducers: an overview. M.H. Westbrook D p339
Development of a rotating-shaft torque sensor for automotive applications. J.D. Turner D p334
Sensor applications of thick-film technology. Prof. J.E. Brignell, N.M. White and A.W.J. Cranny I p77
Sensors and transducers (Editorial). B.V. Jayawant and S.C. Goodwin D p333

TRANSFORMERS

Current equalising transformer for current balance in parallel-connected 12-pulse converter. F.T. Bennell B p85
Design of a digital protection scheme for power transformers using optimal state observers. Y.V.V.S. Murty, W.J. Smolinski and S. Sivakumar C p224
Network parameter estimation using online data with application to transformer tap position estimation. Th. Van Cutsem and V.H. Quintana C p31
Poynting vector probe for measuring power at extremely low power factor. W.Z. Fam A p385
Representation of transformer magnetising characteristic by the extended logistic model. E.H. Barakat and L.N. Abdul-Aal C p144

TRANSIENTS

Comparison of transient performance of superconducting and conventional generators in a multimachine system. S.M. Osheba, M.A.A.S. Alyan and Y.H.A. Rahim C p389
Real-time analytic sensitivity method for transient security assessment and preventive control. Y. Xue, Th. Van Cutsem and M. Ribbens-Pavella C p107
Shunt reactor switching tests in BC Hydro's 500 kV system. D.F. Peelo, B.L. Avent, J.E. Drakos, B.C. Giudici and J.R. Irvine C p420
Transient analysis of Schottky-barrier diodes. A. McCowen, S.B.H. Shaari and K. Board I p71
Transient analysis of a triangular-barrier bulk unipolar diode. A. McCowen, S.B.H. Shaari and K. Board I p107
Two-level state estimation for large power system Part 1: Algorithms. K.L. Lo, M.M. Salem, R.D. McColl and A.M. Moffatt C p299
Two-level state estimation for large power system. Part 2: Computational experience. K.L. Lo, M.M. Salem, R.D. McColl and A.M. Moffatt C p309

TRANSISTORS

Analysis of conventional snubber circuits for PWM inverters using bipolar transistors. P.D. Evans and L.K. Mestha B p180
Computer-aided modelling of discrete high-frequency transistors. K.B. Kumar and V.M. Pandharipande H p171
Digital synchronisation of switching transistors. D.W. Auckland, R. Shuttleworth and T.W. Wong B p97
Measurement of threshold voltage and channel length of submicron MOSFETs. S. Jain I p162
Output characteristic stabilisation of power MOSFETs. M.A. Abdala and B.K. Jones I p91
Output characteristics of insulated gate bipolar transistor modules and improvement with substrate control. M.J. Lazarus, I. Smith, L.L. Jones and A.D. Finney I p97
Simulation of high voltage power switching transistors under forced gain and inductive load turn-off conditions. D.J. Roulston and J.-B. Quoirin I p7
Some observations on the failure locus of *npn* transistors and its improvement using graded collector structures. M.J. Humphreys and K.I. Nuttall I p85
Stabilised high power MOSFET modules. M.J. Lazarus, K.V.O. Rabah and P.M. Ripley I p155
Temperature dependence of the MOS mobility degradation. B.K. Jones and P.C. Russell I p94

TRANSMISSION AND DISTRIBUTION PLANT

Digital simulation of *B/H* excursions for power system studies. S. Ray C p202
Evaluating the approximate probability distributions of load point reliability indices in power distribution networks. E.N. Dialynas C p450
RF analysis of a 12-pulse HVDC convertor. R.V. DeVore, D.F. Kimball, D.G. Kasten and R. Caldecott C p210
Specified current in emergency load switches. P.D. Bourkas, E.A. Kayafas and A.V. Machias C p330
Use of an auto-expansion circuit breaker in a ring main unit. G. Bernard, G. Perrissin and J. Marzocca C p219

TRANSMISSION LINES

Digital protective relaying through recursive least-squares identification. A. Isaksson C p441
Input impedance of rectangular microstrip antennas. A.K. Bhattacharjee, S.R. Bhadra Chaudhuri, A. Mukherjee, D.R. Poddar and S.K. Chowdhury H p351
Irregular wave propagation characteristics in underground transmission cables. Prof. J.A. Brandão Faria C p131
Loss calculations for rectangular coaxial lines. K.H. Lau H p207
Model for multimode picosecond dynamic laser chirp based on transmission line laser model. A.J. Lowery J p126 J p297
New method for transmission planning using mixed-integer programming. M.A. Farrag and M.M. El-Metwally C p319
Semi-analytical method for computing input impedance of general nonuniform transmission line. O.O. Ajayi and S.O. Ajose H p269

TRANSMITTERS

ENCAP-4: an OQPSK-type modulation technique for digital radio. A.M. Gusmão and N.L. Esteves F p105

TURBOGENERATORS

Adaptive controller for a turbogenerator system. Q.H. Wu and B.W. Hogg D p35
Method of detecting and modelling presence of shorted turns in DC field winding of cylindrical rotor synchronous machines using two airgap search coils. R.L. Stoll and A. Hennache B p281

UNDERGROUND CABLES

Computation of temperature field and moisture content in the vicinity of current carrying underground power cables. G.J. Anders and H.S. Radhakrishna C p51
How the electrical properties of soil affect the surge performance of buried long systems. F. Lattarulo A p51
Irregular wave propagation characteristics in underground transmission cables. Prof. J.A. Brandão Faria C p131

VEHICLES AND TRANSPORTATION

Are we in control?. B.V. Jayawant D p1
Automotive transducers: an overview. M.H. Westbrook D p339

Development of a rotating-shaft torque sensor for automotive applications. J.D. Turner D p334

VERY LARGE SCALE INTEGRATION

8 × 8 bit pipelined Dadda multiplier in CMOS. D.G. Crawley and G.A.J. Amaratunga G p231
Discretionary channel routing using score function. K.-P. Tan and T.-S. Tan I p49
Goal-oriented subgraph isomorphism technique for IC device recognition. A.D. Brown and P.R. Thomas I p141
High-level microprogramming support embedded in silicon. R.F. Hobson E p73
Implementation of digital filters via VLSI array processors. B.G. Mertzios and V.L. Syrmos G p78
Systematic design strategy for concurrent error diagnosable iterative logic arrays. S.-W. Chan, S.S. Leung and C.-L. Wey E p87
Systolic array implementation of a decimator and an interpolator. H.K. Kwan and T.S. Okullo-Oballa E p70
Traversing the VLSI design hierarchy for a new, fast systolic stack. H.F. Li, D.K. Probst and R.N. Prasad E p25

VOICE COMMUNICATION

New technique for speaker-independent isolated-word recognition. M.A. Rashwan and M.M. Fahmy F p251
Simultaneous voice and data transmission in private mobile radio using a narrowband FM channel. M.O. Al-Nuaimi and M. Charnley F p439

WAVEGUIDES AND WAVEGUIDE COMPONENTS

(E)ESI determination from mode-field diameter and refractive index profile measurements on single-mode fibres. F. Martinez and C.D. Hussey J p202
A new curvature loss formula of Huygens-type for rib waveguides. P.C. Kendall, M.S. Stern and P.N. Robson J p11
Admittance of a longitudinal slot in a ridge waveguide. K. Falk H p263
Alternative approach to the calibration of six-port reflectometers using four standards. S.P. Yeo and A.L. Ang H p353
Analysis of a multilayer coated optical planar waveguide termination. C.N. Capsalis and N.K. Uzunoglu J p153
Analysis of optical waveguides and some discontinuity problems. B.M. Rahman and J. Davies J p339
Application of finite-element method to arbitrarily shaped discontinuities in a dielectric slab waveguide. M. Koshiba and K. Hirayama H p8
Chirping effects in phase-coupled laser arrays. A. Hardy, W. Streifer and M. Osiński J p443
Crosspolarisation coupling in curved dielectric rib waveguides. C. Yeung, T. Rozzi and G. Cerri J p281
Cylindrical waveguide mode convertor for azimuthally symmetric transverse electric modes. S.R. Seshadri H p420
Designing a symmetrical five-port waveguide junction. A.L. Cullen and S.P. Yeo H p17
E-plane finline circulator using coupled H-plane turnstile resonators. J. Helszajn, G. McDonald and D. Sutherland H p279
Eigenvalues of propagating waves in a circular waveguide with an impedance wall. A.Z. Elsherbeni, J. Stanier and M. Hamid H p23
Electrically variable couplers for integrated optical circuits. J. Sarma and I. Flint J p268
Fabrication techniques of lithium niobate waveguides. M.N. Armenise J p85
Field theory analysis of multiport-multidiscontinuity structures: application to short-circuited *E*-plane septum. J.M. Rebollar and J.A. Encinar H p1
GaInAsP twin-stripe lasers with asymmetrical waveguide channels. Th. Wolf, F. Kappeler, B. Stegmüller and M.-C. Amann J p5
Kummer and Tricomi functions for analysis of circular gyrotropic waveguides with azimuthal magnetisation. K.P. Ivanov and G.N. Georgiev H p125
Limits of electro-absorption in high purity GaAs, and the optimisation of waveguide devices. D.R. Wight, A.M. Keir and G.J. Pryce J p39
Matched waveguide five-port with partial symmetry for use in six-port measurement systems. G.P. Riblet H p13
Metal-clad ridge waveguide laser modes. S.J. Al-Bader and H.A. Jamid J p79
Microwave simulation of optoelectronic bending loss in presence of dielectric discontinuity. T.M. Benson, P.C. Kendall and M.S. Stern J p325
Modified least squares method with application to diffraction and eigenvalue problems. LJ. Stanković and S. Jovićević H p339
Optical properties of metal-clad/$Pb_{1-x}Sn_xTe$ waveguides. A. Shahar and A. Zussman J p349
Quasistatic characteristics of slotted parallel-plate waveguides. H.A. Auda H p256
Resonance characteristics of waveguide slot radiators with moderate width-to-length ratios. A.J. Sangster and A.H.I. McCormick H p319
Semivectorial polarised H field solutions for dielectric waveguides with arbitrary index profiles. M.S. Stern J p333
Semivectorial polarised finite difference method for optical waveguides with arbtitrary index profiles. M.S. Stern J p56
Threshold current of ridge waveguide laser in gain and index regimes including end facet reflectivity. G.P. Bava, P.L. Debernardi, I. Montrosset and M. Scrivanti J p159
Waveguiding analysis of mushroom stripe laser diodes. M.-C. Amann J p68
Waveguiding and temperature characteristics of threshold current and amplitude-phase coupling coefficient in double-heterostructure lasers. A.P. Bogatov J p226

Book reviews

Advanced microprocessor architecture. L. Ciminiera and A. Valenzano E p278
An early history of electricity supply — the story of the electric light in Victorian Leeds. J.D. Poulter A p362
Biological effects and health implications of radiofrequency radiation. S.M. Michaelson and J.C. Lin A p324
Business for engineers. B.C. Twiss A p528
Computer simulation and modelling. F. Neelamkavil D p222
Data communications and teleprocessing systems. T. Housley F p104
Evanescent mode microwave components. George Craven and Richard Skedd H p144
Fibre optic systems. P. Halley J p383
Laser photoionisation spectroscopy. V.S. Letokhov J p187
Management for engineers. D.L. Johnston A p232
Microwave circuits Analysis and computer-aided design. Vincent F. Fusco H p60
Modern aspects of electrochemistry No. 18. R.E. White, J.O.M. Bockris and B.E. Conway (Eds.) A p346
Modern control engineering. K. Ogata D p55
Modern microwave technology. Victor F. Veley H p59
Multivariable control for industrial applications. J. O'Reilly (Ed.) D p500
Notes on microwave circuits vol. 1. D. Kajfez H p216
Optics of charged particles. Hermann Wollnik J p358
Siemens electrical installations handbook (2nd edition). G. Gerrard C p166
Stochastic optimal control. Robert F. Stengel D p499
The Physics of VLSI Systems. R.W. Keyes I p58
VLSI Electronics: Microstructure Science, Vol. 14 VLSI Design. N.G. Einspruch E p188
What makes a manager? W. Hirsh and S. Bevan A p431

Conference publications

282 Third International Conference on Electrical machines and drives B p39
Radar 87 (IEE Conference Publication 281) F p118